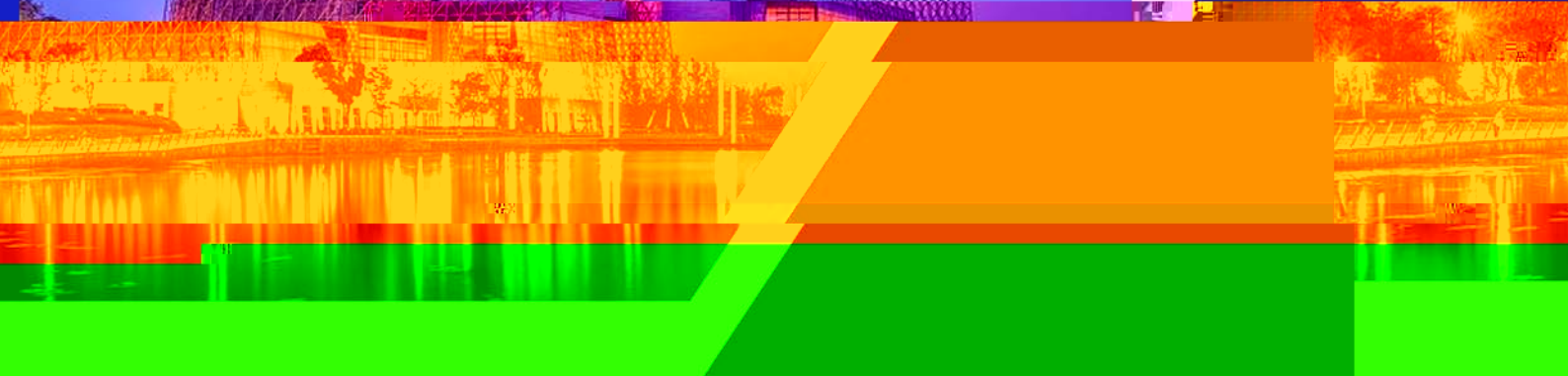




SEMICONDUCTOR

PERFECT POWER SOLUTIONS



Version 5.0



» Company Profile

Perfect Intelligent Power Semiconductor Co.,Ltd (PIP SEM) is a high-tech company located in Brighton, Colorado with focus on technology innovation and customer service. The company has built research and development centers and engineering labs in Los Angeles, Roseville and Dover.

PIP SEM provides the most competitive products, complete solutions and best services for customers, by focusing on the design and development on advanced power semiconductor device and IC, wafer development and package test process technology. The company has multiple patents on process manufacturing and product design. Products developed and produced by PIP SEM, such as VDMDS, SG MDS , Codmos, IGBT, SBR, Gate Driver IC and MEMS are applied in different fields, including consumer electronics, smart home, intelligent lighting, industrial control equipment and electric vehicle.

Adhere to the customer demand, our eternal mission is to create value for our customers. As your reliable partner, PIP SEM looks forward to experience and share the success and future with you.

» 公司简介

PIPSEM

Brighton , —

VDMDS、SG MDS、

Codmos、IGBT、SBR、Gate Driver IC、MEMS

PIPSEM

Planar MOS



| SN | Part Number "x" means package code | Configuration | Parameter | | | | | | | | | | Typical Package | | | | | | | |
|----|---------------------------------------|---------------|-------------------------|-----------------------|--------------------|-----|-----|---|-------|--|------|--------------------|----------------------|--------|---------|--------|--------|--------|-------|--------|
| | | | V _{DSS} (V) | I _D (A) | V _{th} ,V | | | R _{DS(on)} (mΩ) @V _{GS} =10V | | R _{DS(on)} (mΩ) @V _{GS} =4.5V | | Q _g ,nc | C _{iss} ,pF | TO-220 | TO-220P | TO-251 | TO-252 | TO-262 | TO-3P | TO-247 |
| | | | | | Min | Typ | Max | Max | Typ | MAX | TYP | | | | | | | | | |
| 1 | PTx04N04A | Single-N | 40 | 200 | 2 | -- | 4 | 4.5m | -- | -- | -- | -- | -- | * | | | | | | |
| 2 | PTx08N06A | Single-N | 60 | 100 | 2 | -- | 4 | 8m | 7.4m | -- | -- | 60 | 4000 | * | | | | | | |
| 3 | PTP16N06A | Single-N | 60 | 55 | 2 | -- | 4 | 18m | 15m | -- | -- | 41 | 1730 | | | | | | | |
| 4 | PTP20N06A | Single-N | 60 | 50 | 2 | -- | 4 | 23m | 19m | -- | -- | -- | -- | * | | | | | | |
| 5 | PTx11N08A | Single-N | 80 | 75 | 2 | -- | 4 | 11m | 9.5m | -- | -- | 69 | 4541 | | | | | | | |
| 6 | PTx23N10A | Single-N | 100 | 57 | 2 | -- | 4 | 23m | | | | 114 | 4563 | | | | | | | |
| 7 | PTx540 | Single-N | 100 | 33 | 2 | -- | 4 | 44m | 30m | | | 37 | 2700 | | | | | | | |
| 8 | PTx09N20A | Single-N | 200 | 9 | 2 | -- | 4 | 0.300 | 0.250 | -- | -- | 16 | 670 | * | | | | | | |
| 9 | PTx09N20C | Single-N | 200 | 9 | 1 | -- | 3 | 0.300 | 0.250 | 0.32 | 0.27 | 16 | 420 | | | | | | | |
| 10 | PTx11N20C | Single-N | 200 | 11 | 1 | -- | 3 | 0.300 | 0.250 | 0.32 | 0.27 | 16 | 420 | | | | | | | |
| 11 | PTx18N20A | Single-N | 200 | 18 | 2 | -- | 4 | 0.180 | 0.120 | -- | -- | 34 | 1256 | * | | | | | | |
| 12 | PTx18N20B | Single-N | 200 | 18 | 2 | -- | 4 | 0.180 | 0.130 | -- | -- | 50 | 940 | | | | | | | |
| 13 | PTx40N20 | Single-N | 200 | 40 | 2 | -- | 4 | 0.065 | 0.050 | | | 97 | 2800 | | | | | | | |
| 14 | PTW50N20 | Single-N | 200 | 50 | 2 | -- | 4 | 0.050 | 0.040 | -- | -- | 210 | 3700 | | | | | | | |
| 15 | PTW90N20 | Single-N | 200 | 90 | 2 | -- | 4 | 0.023 | 0.018 | -- | -- | 270 | 6280 | | | | | | | |
| 16 | PTA50N25 | Single-N | 250 | 50 | 2 | -- | 4 | 0.060 | 0.045 | | | 210 | 4000 | | | | | | | |
| 17 | PTW69N30 | Single-N | 300 | 69 | 2 | -- | 4 | 0.049 | 0.034 | -- | -- | 150 | 7200 | | | | | | | |
| 18 | PSx06N40 | Single-N | 400 | 6 | 2 | -- | 4 | 1.000 | 0.780 | | | 14.5 | 500 | | | | | | | |
| 19 | PSx10N40 | Single-N | 400 | 10 | 2 | -- | 4 | 0.500 | 0.400 | | | 28 | 1254 | | | | | | | |
| 20 | PTx11N40 | Single-N | 400 | 11 | 2 | -- | 4 | 0.500 | 0.350 | | | 28 | 1254 | | | | | | | |
| 21 | PTx20N40 | Single-N | 400 | 20 | 2 | -- | 4 | 0.220 | 0.170 | | | 65 | 2650 | | | | | | | |
| 22 | PTx20N40B | Single-N | 400 | 20 | 2 | -- | 4 | 0.300 | 0.240 | | | 35 | 2550 | | | | | | | |
| 23 | PTx50N40 | Single-N | 400 | 50 | 2 | -- | 4 | 0.100 | 0.085 | | | 65 | 2650 | | | | | | | |
| 24 | PTW60N40 | Single-N | 400 | 60 | 2 | -- | 4 | 0.080 | 0.060 | -- | -- | 150 | 7200 | | | | | | | |
| 25 | PTA11N45 | Single-N | 450 | 11 | 2 | -- | 4 | 0.500 | 0.390 | -- | -- | 28 | 1250 | | | | | | | |
| 26 | PSx05N50 | Single-N | 500 | 5 | 2 | -- | 4 | 1.500 | 1.300 | -- | -- | 14 | 525 | * | | | | | | |
| 27 | PTx07N50 | Single-N | 500 | 7 | 2 | -- | 4 | 1.200 | 1.000 | -- | -- | 14 | 800 | | | | | | | |
| 28 | PSx5090 | Single-N | 500 | 9 | 2 | -- | 4 | 0.900 | 0.700 | -- | -- | 24 | 960 | | | | | | | |
| 29 | PTx09N50 | Single-N | 500 | 9 | 2 | -- | 4 | 0.750 | 0.550 | -- | -- | 28 | 1253 | | | | | | | |
| 30 | PTx12N50B | Single-N | 500 | 12 | 2 | -- | 4 | 0.520 | 0.440 | -- | -- | 30 | 1600 | | | | | | | |
| 31 | PTx13N50B | Single-N | 500 | 12 | 2 | -- | 4 | 0.500 | 0.400 | -- | -- | 32 | 1180 | | | | | | | |
| 32 | PSx13N50 | Single-N | 500 | 13 | 2 | -- | 4 | 0.480 | 0.400 | -- | -- | 45 | 2150 | * | | | | | | |
| 33 | PTx15N50 | Single-N | 500 | 15 | 2 | -- | 4 | 0.450 | 0.330 | -- | -- | 45 | 2150 | | | | | | | |

Planar MOS




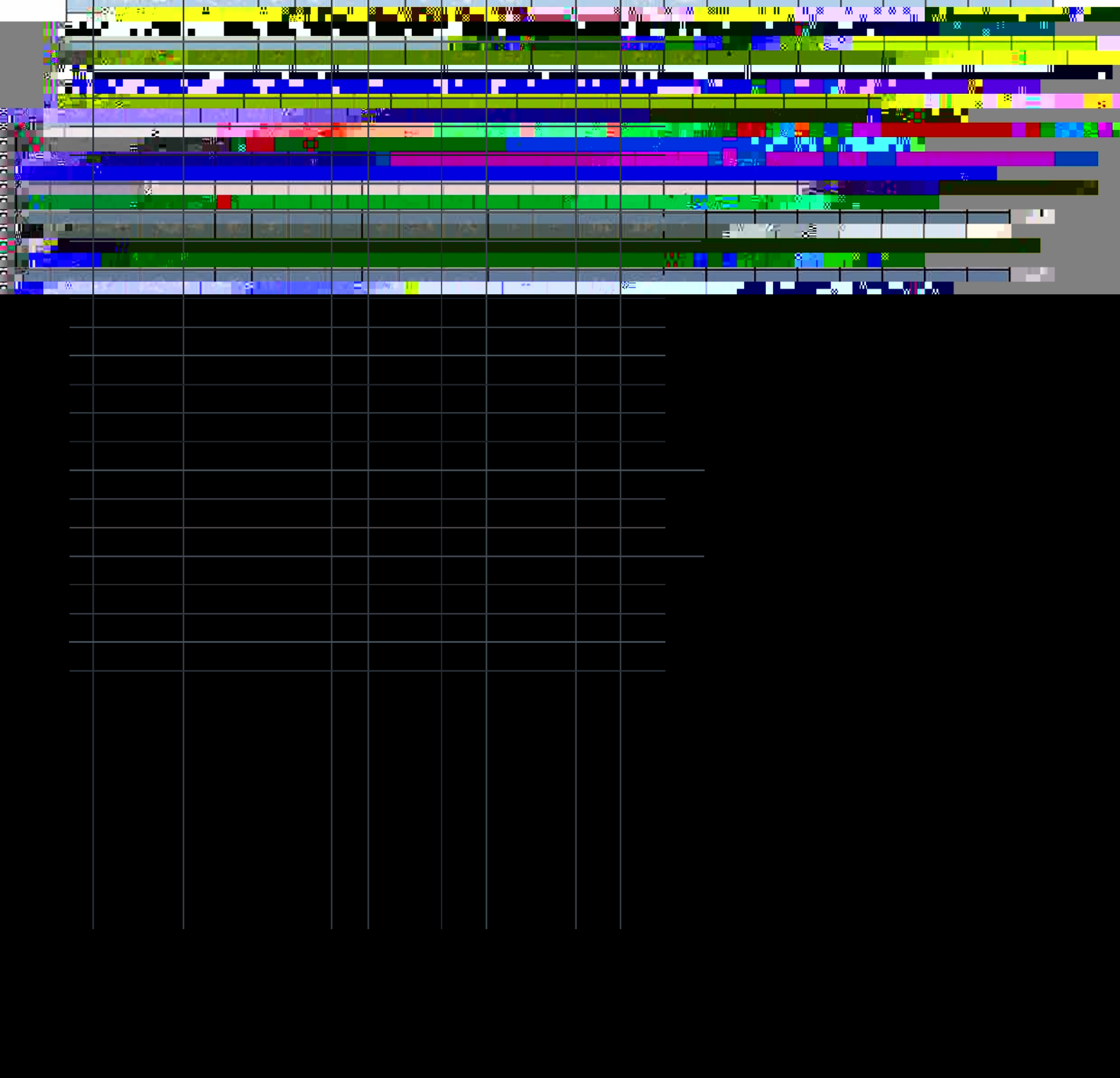
| SN | Part Number "x" means package code | Configuration | Parameter | | | | | | | | | | Typical Package | | | | | | | |
|----|---------------------------------------|---------------|-------------------------|-----------------------|---------------------|-----|-----|---|-------|--|-----|--------------------------|----------------------------|--------|---------|--------|--------|--------|-------|--------|
| | | | V _{DSS} (V) | I _D (A) | V _{th} , V | | | R _{DS(on)} (mΩ) @V _{GS} =10V | | R _{DS(on)} (mΩ) @V _{GS} =4.5V | | Q _{g,nc} Typ | C _{iss} PF Typ | TO-220 | TO-220F | TO-251 | TO-252 | TO-262 | TO-3P | TO-247 |
| | | | | | Min | Typ | Max | Max | Typ | MAX | TYP | | | P | A | U | D | L | W | F |
| 34 | PTx1 SNSCB | Single-N | 500 | 15 | 2 | -- | 4 | 0.470 | 0.380 | -- | -- | 35 | 2200 | * | * | | | | | |
| 35 | PTx1 7NSO | Sing N | 500 | 17 | 2 | -- | 4 | 0.380 | 0.280 | -- | -- | 45 | 2500 | * | * | | | | | |
| 36 | PTx1 8N50 | Single-N | 500 | 17 | 2 | -- | 4 | 0.350 | 0.270 | -- | -- | 65 | 2670 | * | * | | | | | |
| 37 | PTx20NSO | Single-N | 500 | 20 | 2 | -- | 4 | 0.300 | 0.240 | -- | -- | 65 | 2670 | | | | | | | |
| 38 | PTx28NSO | Single-N | 500 | 28 | 2 | -- | 4 | 0.210 | 0.170 | -- | -- | 78 | 4280 | * | * | | | | | |
| 39 | PTx30N60EL | Single-N | 500 | 30 | 2.5 | -- | 4.5 | 0.200 | 0.150 | -- | -- | 101 | 4150 | | | | | | | |
| 40 | PTW40NSO | Single-N | 500 | 46 | 2 | -- | 4 | 0.100 | 0.085 | -- | -- | 150 | 6888 | * | * | | | | | |
| 41 | PTx02N60 | Sing N | 600 | 2 | 2 | -- | 4 | 4.600 | 3.200 | -- | -- | 9 | 281 | | | | | | | |
| 42 | PSx04N60 | Smgle-N | 600 | 4 | 2 | -- | 4 | 2.300 | 1.800 | -- | -- | 15 | 550 | | | | | | | |
| 43 | PSx04N60B | Sing N | 600 | 4 | 2 | -- | 4 | 2.300 | 2.000 | -- | -- | 8.5 | 450 | | | | | | | |
| 44 | PSx05N60 | Single-N | 600 | 4 | 2 | -- | 4 | 2.200 | 1.750 | -- | -- | 12 | 667 | | | | | | | |
| 45 | PTx06N60C | Single-N | 600 | 6 | 2 | -- | 4 | 1.700 | 1.400 | -- | -- | 19 | 100 | | | | | | | |
| 46 | PSx07N60 | Single-N | 600 | 7 | 2 | -- | 4 | 1.250 | 1.000 | -- | -- | 25 | 1050 | | | | | | | |
| 47 | PTx07N60B | Single-N | 600 | 7 | 2 | -- | 4 | 1.250 | 1.000 | -- | -- | 20 | 11201 | * | * | | | | | |
| 48 | PTx05N60 | Sing N | 600 | 8 | 2 | -- | 4 | 1.100 | 0.800 | -- | -- | 29 | 1253 | | | | | | | |
| 49 | PTx1 0N608 | Sing N | 600 | 10 | 2 | -- | 4 | 0.750 | 0.650 | | | 32 | 1660 | | | | | | | |
| 50 | PS 0N60 | Sing N | 600 | 10 | 2 | -- | 4 | 0.750 | 0.600 | | | 40 | 1560 | | | | | | | |
| 51 | PSx1 0N60C | Sing N | 600 | 10 | 2 | -- | 4 | 0.750 | 0.650 | -- | -- | 31 | 1264 | | | | | | | |
| 52 | PTx1 2N60 | Single-N | 600 | 12 | 2 | -- | 4 | 0.700 | 0.550 | -- | -- | 44 | 1540 | | | | | | | |
| 53 | PTx1 3N60 | Sing N | 600 | 13 | 2 | -- | 4 | 0.600 | 0.450 | -- | -- | 46 | 2120 | | | | | | | |
| 54 | PTx1 6N60 | Sing N | 600 | 16 | 2 | -- | 4 | 0.500 | 0.400 | -- | -- | 40 | 2400 | | | | | | | |
| 55 | PTx20N60A | Single-N | 600 | 20 | 2 | -- | 4 | 0.450 | 0.320 | -- | -- | 65 | 2600 | | | | | | | |
| 56 | PTA26N60 | Single-N | 600 | 26 | 2 | -- | 4 | 0.350 | 0.250 | -- | -- | 78 | 4280 | | | | | | | |
| 57 | PT 36N60 | Sing N | 600 | 36 | 2 | -- | 4 | 0.180 | 0.120 | -- | -- | 150 | 7400 | | | | | | | |
| 58 | PTx02N65 | Single-N | 650 | 2 | 2 | -- | 4 | 5.000 | 4.000 | -- | -- | 9 | 290 | | | | | | | * |
| 59 | PSx04N65 | Single-N | 650 | 4 | 2 | -- | 4 | 2.500 | 1.900 | -- | -- | 15 | S44 | | | | | | | |
| 60 | PSx04N65C | Single-N | 650 | 4 | 2 | -- | 4 | 2.500 | 2.000 | -- | -- | 17.5 | 650 | | | | | | | |
| 61 | PSx04N65B | Sing N | 650 | 4 | 2 | -- | 4 | 2.500 | 2.100 | -- | -- | 8.5 | 450 | | | | | | | |
| 62 | PTx05N65 | Sing N | 650 | 5 | 2 | -- | 4 | 2.500 | 2.000 | -- | -- | 17 | 650 | | | | | | | |
| 63 | PTx06N65C | Single-N | 650 | 6 | 2 | -- | 4 | 1.500 | 1.100 | -- | -- | 18 | 660 | | | | | | | * |
| 64 | PSx07N65 | Sing N | 650 | 7 | 2 | -- | 4 | 1.400 | 1.100 | -- | -- | 25 | 1050 | | | | | | | |
| 65 | PTx07N65B | Sing N | 650 | 7 | 2 | -- | 4 | 1.400 | 1.200 | -- | -- | 20 | 1120 | | | | | | | |
| 66 | PTx08N65 | Single-N | 650 | 8 | 2 | -- | 4 | 1.300 | 0.950 | -- | -- | 28 | 1240 | | | | | | | |
| 67 | PTx1 0N65B | Single-N | 650 | 10 | 2 | -- | 4 | 0.900 | 0.750 | | | 32 | 1660 | | | | | | | * |

Planar MOS



| | | | | | | | | | | | | | | | |
|-----|------------|----------|------|----|-----|----|-----|-------|-------|----|----|------|------|--|---|
| 68 | PSx10N65C | Single-N | 650 | 10 | 2 | -- | 4 | 0.850 | 0.700 | -- | -- | 43 | 1340 | | * |
| 69 | PTx12N65 | Single-N | 650 | 12 | 2 | -- | 4 | 0.750 | 0.600 | -- | -- | 52 | 1900 | | * |
| 70 | PTx13N65 | Single-N | 650 | 12 | 2 | -- | 4 | 0.450 | 0.600 | -- | -- | 16 | 2100 | | |
| 71 | PTx16N65 | Single-N | 650 | 16 | 2 | -- | 4 | 0.550 | 0.450 | -- | -- | 54 | 2442 | | |
| 72 | PTx20N65A | Single-N | 650 | 20 | 2 | -- | 4 | 0.500 | 0.350 | -- | -- | 63 | 2600 | | |
| 73 | PTx26N65 | Single-N | 650 | 26 | 2 | -- | 4 | 0.380 | 0.280 | -- | -- | 78 | 4200 | | |
| 74 | PTW34N65 | Single-N | 650 | 34 | 2 | -- | 4 | 0.190 | 0.130 | -- | -- | 150 | 7400 | | |
| 75 | PSx04N70 | Single-N | 700 | 4 | 2 | -- | 4 | 2.800 | 2.500 | -- | -- | 15 | 500 | | |
| 76 | PSx06N70 | Single-N | 700 | 6 | 2 | -- | 4 | 1.600 | 1.350 | -- | -- | 23.5 | 938 | | |
| 77 | PTx06N70B | Single-N | 700 | 6 | 2 | -- | 4 | 1.800 | 1.450 | -- | -- | 20 | 1100 | | |
| 78 | PTx10N70B | Single-N | 700 | 10 | 2 | -- | 4 | 1.000 | 0.876 | -- | -- | 32 | 1650 | | * |
| 79 | PSx10N70 | Single-N | 700 | 10 | 2 | -- | 4 | 0.900 | 0.800 | -- | -- | 40 | 1540 | | |
| 80 | PTx12N70 | Single-N | 700 | 12 | 2 | -- | 4 | 0.850 | 0.720 | -- | -- | 30 | 1950 | | |
| 81 | PTx16N70 | Single-N | 700 | 16 | 2 | -- | 4 | 0.750 | 0.600 | -- | -- | 40 | 2400 | | |
| 82 | PTx20N70A | Single-N | 700 | 20 | 2 | -- | 4 | 0.700 | 0.500 | -- | -- | 61 | 3590 | | |
| 83 | PTx26N70 | Single-N | 700 | 26 | 2 | -- | 4 | 0.450 | 0.350 | -- | -- | 78 | 4200 | | |
| 84 | PTW32N70 | Single-N | 700 | 32 | 2 | -- | 4 | 0.210 | 0.160 | -- | -- | 145 | 7400 | | * |
| 85 | PTx04N80 | Single-N | 800 | 4 | 2 | -- | 4 | 4.800 | 3.700 | -- | -- | 16 | 490 | | |
| 86 | PTx07N80 | Single-N | 800 | 7 | 3 | -- | 5 | 1.800 | 1.500 | -- | -- | 34 | 1350 | | |
| 87 | PTx10N80 | Single-N | 800 | 10 | 2 | -- | 4 | 1.150 | 1.000 | -- | -- | 60 | 2900 | | |
| 88 | PTx14N80 | Single-N | 800 | 14 | 2 | -- | 4 | 0.720 | 0.630 | -- | -- | | | | |
| 89 | PTF27N80 | Single-N | 800 | 27 | 2.5 | -- | 4.5 | 0.350 | 0.280 | -- | -- | 180 | 7300 | | |
| 90 | PTx04N90 | Single-N | 900 | 4 | 2 | -- | 4 | 4.800 | 3.600 | -- | -- | 16 | 490 | | |
| 91 | PTx06N90 | Single-N | 900 | 6 | 3 | -- | 5 | 1.900 | 1.400 | -- | -- | 37 | 1460 | | * |
| 92 | PTx09N90 | Single-N | 900 | 9 | 2 | -- | 4 | 1.400 | 1.200 | -- | -- | 48 | 2500 | | |
| 93 | PTx12N90 | Single-N | 900 | 12 | 2 | -- | 4 | 1.000 | 0.850 | -- | -- | -- | -- | | * |
| 94 | PTF24N90 | Single-N | 900 | 24 | 3 | -- | 5 | 0.420 | 0.320 | -- | -- | 183 | 7500 | | |
| 95 | PTx02N100 | Single-N | 1000 | 2 | 2 | -- | 4 | 8.800 | 7.800 | -- | -- | 15 | 380 | | |
| 96 | PTx04N100 | Single-N | 1000 | 4 | 3 | -- | 5 | 2.500 | 2.200 | -- | -- | 36 | 1470 | | |
| 97 | PTx06N100 | Single-N | 1000 | 6 | 2.5 | -- | 4.5 | 2.300 | 2.000 | -- | -- | | | | |
| 98 | PTx10N100 | Single-N | 1000 | 10 | 3 | -- | 5 | 1.4 | 1 | -- | -- | | | | |
| 99 | PTF24N100 | Single-N | 1000 | 24 | 2.5 | -- | 4.5 | 0.45 | 0.38 | -- | -- | 183 | 7400 | | |
| 100 | PTFN38N100 | Single-N | 1000 | 38 | 2 | -- | 4 | 0.28 | 0.24 | -- | -- | 240 | 2125 | | |
| 101 | PTx03N150 | Single-N | 1500 | 3 | 2.5 | -- | 4.5 | 8.2 | 5.4 | -- | -- | 36 | 1600 | | |

| SN | Part Number "x" means package code | Configuration | Parameter | | | | | | | | | | | Typical Package | | | | | | | | |
|----|---------------------------------------|---------------|-------------------------|-----------------------|---------------------|-----|-----|---|-----|--|-----|---------------------|---------------------|-----------------|---------|--------|--------|--------|-----------------|---|------|--|
| | | | V _{DSS} (V) | I _b (A) | V _{th} (V) | | | R _{DS(on)} (mΩ) @V _{GS} =10V | | R _{DS(on)} (mΩ) @V _{GS} =4.5V | | Q _g (nC) | C _{iss} PF | TO-220 | TO-220F | TO-263 | TO-251 | TO-252 | Power PAKS'6 |  | SOP8 | |
| | | | (V) | (A) | MIN | TYP | MAX | Max | Typ | MAX | TYP | TYP | TYP | P | A | B | U | D | J | Z6 | S | |
| | | | | | | | | | | | | | | | | | | | | | * | |
| | | | | | | | | | | | | | | | | | | | | | * | |
| | | | | | | | | | | | | | | | | | | | | | * | |
| | | | | | | | | | | | | | | | | | | | | | * | |
| | | | | | | | | | | | | | | | | | | | | | * | |
| | | | | | | | | | | | | | | | | | | | | | * | |



SGT MOS



* 产品持续开发中

* SGT MOSFET =SuperGate Trench MOSFET

R_{ds(on)}
Q_{gd}
C_{iss}

Depletion MOS

| SN | Part Number | Configuration | Status M=Mass Product | Parameter | | | | | | | | | Typical Package | |
|----|-------------|-------------------------|--------------------------|-------------------------|-----------------------|-------------------------|------|------|-------------------------|-----|--------------------------|----------------------------|-----------------|---|
| | | | | V _{DSX} (V) | I _b (A) | V _{GS(Off)} ,V | | | R _{DS(on)} (m) | | Q _{g,nc} Typ | C _{iss} PF Typ | SOT-23 | Z |
| | | | | Min | Typ | Max | Max | Typ | Typ | Typ | | | | |
| 1 | PDZ15R15K | Single-N Depletion-Mode | M | 150 | 0.2 | -8.0 | -- | -6.0 | 15 | 10 | 1 | 12 | * | |
| 2 | F501D | Single-N Depletion-Mode | M | 600 | 0.012 | -2.7 | -1.8 | -1.0 | 700 | 350 | 1.1 | 50 | * | |

Low VF Schottky Diode

| SN | Part Number | Configuration | Parameter | | | | Typical Package | | | | Die Size mil |
|----|-------------|---------------|------------------------|-----------------------|---------------------------|---------------------------|-----------------|-----------|--------|-------|-----------------|
| | | | V _{RM} (V) | I _F (A) | V _F Typ (V) | V _F Max (V) | TO-220F-3L | TO-220-3L | TO-263 | TO-3P | |
| | | | 3pin | 3pin | 2pin | 3pin | | | | | |
| 1 | MS10100CTF | Dual | 100 | 15(total) | 0.64 | 0.75 | * | | | | 75 |
| 2 | MS20L100CTF | Dual | 100 | 20(total) | 0.62 | 0.75 | * | | | | 82 |
| 3 | MS20L80CTF | Dual | 100 | 20(total) | 0.62 | 0.75 | * | | | | 82 |
| 4 | MS20U80CTF | Dual | 80 | 20(total) | 0.60 | 0.70 | * | | | | 94 |
| 5 | MS30U100CTF | Dual | 100 | 30(total) | 0.55 | 0.65 | * | | | | 94 |

IGBT

| SN | Part Number | Configuration | V _{DS} (V) | I _C (A) | Parameter | | | | Typical Package | | | | |
|----|-------------|-------------------------|------------------------|-----------------------|-----------------------------|-----------------------------|-----------------------|----------------------------|-----------------|--------|------|---|---|
| | | | | | V _{CE(sat)} (V) | V _{CE(sat)} (V) | Q _g Typ | C _{iss} PF Typ | TO-3P | TO-247 | | | |
| | | | | | Min | Typ | Max | Max | Typ | Typ | | | |
| 1 | IGW40N60A | Single-N parallel diode | 600 | 40 | 4 | 5 | 6.5 | 2.00 | 2.4 | 130 | 4400 | * | * |
| 2 | IGW40N120A | Single-N parallel diode | 1200 | 40 | 4 | 5.6 | 7 | 2.00 | 2.4 | 222 | 9100 | * | * |

SJ MOSFET-Deep Trench



| | | | | | | | | | | | | | | | | | | |
|----|---------------|----------|-----|----|-----|----|-----|-------|-------|------|------|---|---|---|---|---|---|---|
| 1 | SPTx22N50A | Single-N | 500 | 22 | 2 | -- | 4 | 0.150 | 0.130 | 54 | 2140 | * | * | | | | * | * |
| 2 | SPTx50R120 | Single-N | 500 | 22 | 2 | -- | 4 | 0.140 | 0.125 | 40.5 | 1600 | * | * | * | * | * | * | |
| 3 | SPTx50R250 | Single-N | 500 | 15 | 2 | -- | 4 | 0.360 | 0.320 | 17 | 700 | * | * | * | * | * | * | |
| 4 | SPTx50R400 | Single-N | 500 | 7 | 2 | -- | 4 | 0.540 | 0.480 | 10 | 450 | * | * | * | * | * | * | |
| 5 | SPTx50R500 | Single-N | 500 | 6 | 2 | -- | 4 | 0.650 | 0.580 | 8 | 400 | * | * | * | * | * | * | |
| 6 | SPTx50R690 | Single-N | 500 | 4 | 2 | -- | 4 | 0.820 | 0.730 | 7 | 350 | * | * | * | * | * | * | |
| 7 | SPTx50R1K7 | Single-N | 500 | 2 | 2 | -- | 4 | 1.700 | 1.500 | 4 | 200 | | | * | * | | | |
| 8 | SPTx50R1K6 | Single-N | 500 | 2 | 2 | -- | 4 | 1.800 | 1.600 | 3.5 | 170 | | | * | * | | | |
| 9 | SPTF60R090MFD | Single-N | 600 | 47 | 3 | -- | 5 | 0.090 | 0.077 | 75 | 4500 | | | | | | | |
| 10 | SPTx60R150 | Single-N | 600 | 20 | 2 | -- | 4 | 0.150 | 0.130 | 41 | 1605 | | | | | | | |
| 11 | SPTx60R260 | Single-N | 600 | 15 | 2 | -- | 4 | 0.260 | 0.230 | 28 | 1300 | | | | | | | |
| 12 | SPTx60R350 | Single-N | 600 | 12 | 2 | -- | 4 | 0.380 | 0.340 | 17 | 700 | | | | | | | |
| 13 | SPTx60R580 | Single-N | 600 | 8 | 2 | -- | 4 | 0.580 | 0.500 | 10 | 450 | | | | | | | |
| 14 | SPTx60R700 | Single-N | 600 | 6 | 2 | -- | 4 | 0.700 | 0.630 | 8 | 400 | | | | | | | |
| 15 | SPTx60R840 | Single-N | 600 | 4 | 2 | -- | 4 | 0.900 | 0.840 | 7 | 350 | | | | | | | |
| 16 | SPTx60R1K7 | Single-N | 600 | 2 | 2 | -- | 4 | 1.700 | 1.540 | 4 | 200 | | | | | | | |
| 17 | SPTx60R1K8 | Single-N | 600 | 2 | 2 | -- | 4 | 2.000 | 1.800 | 3.5 | 170 | | | | | | | |
| 18 | SPTF65R041 | Single-N | 650 | 78 | 3.5 | -- | 4.5 | 0.041 | 0.038 | 120 | 7090 | | | | | | | |
| 19 | SPTx65R080 | Single-N | 650 | 47 | 2.5 | -- | 4.5 | 0.080 | 0.065 | 90 | 5000 | | | | | | | |
| 20 | SPTF65R100MFD | Single-N | 650 | 47 | 3 | -- | 5 | 0.100 | 0.088 | 75 | 3600 | | | | | | | * |
| 21 | SPTx65R160 | Single-N | 650 | 20 | 2 | -- | 4 | 0.180 | 0.160 | 40 | 1600 | * | | | | | | |
| 22 | SPTx65R260 | Single-N | 650 | 15 | 2 | -- | 4 | 0.260 | 0.230 | 28 | 1300 | | | | | | | |
| 23 | SPTx65R380 | Single-N | 650 | 11 | 2 | -- | 4 | 0.420 | 0.380 | 20 | 700 | | | | | | | |
| 24 | SPTx65R600 | Single-N | 650 | 7 | 2 | -- | 4 | 0.620 | 0.560 | 10 | 450 | * | * | * | | | | |
| 25 | SPTx65R750 | Single-N | 650 | 6 | 2 | -- | 4 | 0.750 | 0.680 | 8 | 400 | | | | | | | |
| 26 | SPTx65R950 | Single-N | 650 | 4 | 2 | -- | 4 | 1.000 | 0.880 | 7 | 350 | | | | | | | |
| 27 | SPTx65R1K2 | Single-N | 650 | 4 | 2 | -- | 4 | 1.200 | 1.100 | 8.8 | 200 | | | | | | | |
| 28 | SPTx65R2K3 | Single-N | 650 | 2 | 2 | -- | 4 | 2.200 | 2.000 | 3.5 | 170 | | | | | | | |
| 29 | SPTx70R190 | Single-N | 700 | 20 | 2 | -- | 4 | 0.210 | 0.190 | 41 | 1605 | | | | | | | |
| 30 | SPTx70R390 | Single-N | 700 | 15 | 2 | -- | 4 | 0.400 | 0.380 | 22 | 1000 | | | | | | | |
| 31 | SPTx70R450 | Single-N | 700 | 11 | 2 | -- | 4 | 0.550 | 0.490 | 17 | 700 | | | | | | | |
| 32 | SPTx70R700 | Single-N | 700 | 7 | 2 | -- | 4 | 0.850 | 0.750 | 10 | 450 | | | | | | | |
| 33 | SPTx70R950 | Single-N | 700 | 6 | 2 | -- | 4 | 1.000 | 0.860 | 8 | 400 | | | | | | | |
| 34 | SPTx70R1K3 | Single-N | 700 | 5 | 2 | -- | 4 | 1.400 | 1.260 | 7 | 350 | | | | | | | |
| 35 | SPTx70R2K5 | Single-N | 700 | 2 | 2 | -- | 4 | 2.500 | 2.200 | 4 | 200 | | | | | | | |
| 36 | SPTx90R1K2 | Single-N | 900 | 4 | 2 | -- | 4 | 1.600 | 1.400 | 14.5 | 587 | * | * | * | | | | |

SJ MOSFET Multi-EPI



| SN | Part Number "x" means package code | Configuration | Parameter | | | | | | | | | Typical Package | | | | | | | |
|----|---------------------------------------|---------------|------------------|----------------|---------------------|-----|-----|--------------------------|-----|-------------------|-----------------------|-----------------|---------|--------|--------|--------|--------|-------|--------|
| | | | V _{DSS} | I _D | V _{th} , V | | | R _{DS(on)} (mΩ) | | Q _{g,nc} | C _{iss} , pF | JQ-220 | JQ-220E | JQ-251 | JQ-252 | JQ-262 | JQ-263 | JQ-3P | JQ-247 |
| | | | (V) | (A) | Min | Typ | Max | Max | Typ | Typ | Typ | P | A | U | D | L | B | W | F |
| 1 | SPTx60R090E | Single-N | 600 | 47 | 2.5 | -- | 4.5 | 90 | 70 | 75 | 3900 | | * | | | | | * | |
| 2 | SPTx60R090EFD | with FRD | 600 | 47 | 3.0 | -- | 5.0 | 90 | 80 | 75 | 3900 | | | | | | | * | |
| 3 | SPTx60R150E | Single-N | 600 | 20 | 2.5 | -- | 4.5 | 150 | 120 | 48 | 1966 | | * | | | | | | |
| 4 | SPTx60R130E | Single-N | 600 | 25 | 2.5 | -- | 4.5 | 150 | 110 | 48 | 1966 | | * | | | | | | |
| 5 | SPTx60R180EFD | with FRD | 600 | 20 | 3.0 | -- | 5.0 | 180 | 140 | 48 | 1966 | | | | | | | | |
| 6 | SPTx60R190E | Single-N | 600 | 20 | 2.5 | -- | 4.5 | 210 | 180 | 35.7 | 1354 | | | | | | | | |
| 7 | SPTx60R220E | Single-N | 600 | 18 | 2.5 | -- | 4.5 | 220 | 180 | 35.7 | 1354 | | | | | | | | |
| 8 | SPTx60R550E | Single-N | 600 | 8 | 2.5 | -- | 4.5 | 550 | 480 | 10.7 | 380 | | | | | | | | |
| 9 | SPTx60R580E | Single-N | 600 | 8 | 2.5 | -- | 4.5 | 580 | 480 | 24 | 550 | | | | | | | | |
| 10 | SPTx60R820E | Single-N | 600 | 5 | 2.5 | -- | 4.5 | 840 | 740 | 10.7 | 380 | | | | | | | | |
| 11 | SPTx6SR090E | Single-N | 650 | 47 | 2.5 | -- | 4.5 | 90 | 72 | 75 | 3900 | | | | | | | | |
| 12 | SPTx6SR09SEFD | with FRD | 650 | 47 | 3.0 | -- | 5.0 | 95 | 82 | 75 | 3900 | | | | | | | | |
| 13 | SPTx6SR130E | Single-N | 650 | 25 | 2.5 | -- | 4.5 | 150 | 120 | 48 | 1966 | | | | | | | | |
| 14 | SPTx65R160E | Single-N | 650 | 20 | 2.5 | -- | 4.5 | 160 | 130 | 48 | 1966 | | | | | | | | |
| 15 | SPTx65R190EFD | with FRD | 650 | 20 | 3.0 | -- | 5.0 | 190 | 140 | 48 | 966 | | | | | | | | |
| 16 | SPTx6SR220E | Single-N | 650 | 18 | 2.5 | -- | 4.5 | 220 | 190 | 30 | 1400 | | | | | | | | |
| 17 | SPTx6SR350E | Single-N | 650 | 12 | 2.5 | -- | 4.5 | 350 | 320 | 11 | 380 | | | | | | | | |
| 18 | SPTx6SRSS0E | Single-N | 650 | 8 | 2.5 | -- | 4.5 | 550 | 500 | 8.0 | 550 | | | | | | | | |
| 19 | SPTx65R850E | Single-N | 650 | 5 | 2.5 | -- | 4.5 | 850 | 750 | 11 | 380 | | | | | | | | |
| 20 | SPTx70R390E | Single-N | 700 | 15 | 2.8 | -- | 4.2 | 380 | 340 | 15.6 | 562 | | | | | | | | |
| 21 | SPTx70R600E | Single-N | 700 | 11 | 2.5 | -- | 4.5 | 600 | 540 | 16 | 560 | | | | | | | | |
| 22 | SPTx70R950E | Single-N | 700 | 6 | 2.5 | -- | 4.5 | 950 | 870 | 11 | 360 | | | | | | | | |
| 23 | SPTx60R090MFD | with FRD | 600 | 47 | 3.0 | -- | 5.0 | 90 | 77 | 75 | 4500 | | | | | | | | |
| 24 | SPTx60R099M | Single-N | 600 | 30.7 | 2.0 | -- | 4.0 | 99 | 86 | 75 | 3300 | | | | | | | | |
| 25 | SPTx60R180M | Single-N | 600 | 20 | 2.0 | -- | 4.0 | 190 | 160 | 40 | 1750 | | | | | | | | |
| 26 | SPTx60R190M | Single-N | 600 | 20 | 2.0 | -- | 4.0 | 190 | 165 | 40 | 1750 | | | | | | | | |
| 27 | SPTx60R350M | Single-N | 600 | 12 | 2.0 | -- | 4.0 | 350 | 320 | 17 | 700 | | | | | | | | |
| 28 | SPTx6SR100MFD | with FRD | 650 | 47 | 3.0 | -- | 5.0 | 100 | 88 | 75 | 3600 | | | | | | | | |
| 29 | SPTx6SR380M | Single-N | 650 | 11 | 2.0 | -- | 4.0 | 380 | 340 | 20 | 700 | | | | | | | | |
| 30 | SPTx65R950M | Single-N | 650 | 4.8 | 2.0 | -- | 4.0 | 950 | 870 | 9.3 | 390 | | | | | | | | |
| 31 | SPTx70R430M | Single-N | 700 | 11 | 2.0 | -- | 4.0 | 420 | 365 | 22.6 | 990 | | | | | | | | |

* 产品持续开发中

* Multi-EPI Super Junction MOSFET多层外延超结场效应管是一种新型功率器件。

采用基于电荷平衡的延器件结构,导通电阻与栅电荷明显下降,在应用中可减小系统功率损耗并提高其转换效率。

多层外延超结场效应管具有更好的产品特性一致性以及更优的雪崩能力和EMI性能。



tfss



World first-level wafer fab, verify qualified automotive electronics technology with main products consist of smart power supply management, power MOSFET and high-frequency IC.

TF Semiconductor Solutions

1903



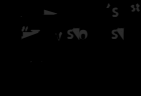
1928



1930



1932



1950



1960



2010



2009



200



1994



1982



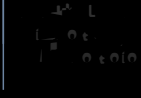
2011



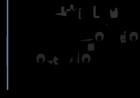
2014



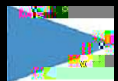
2015



2017



2019



High Voltage Gate Driver ICs



Single Phase

| Part | Name | IO+/IO- | Inputs | Deadtime | ton/toff | tr/td | Package |
|----------|------------------------------------|-------------|------------|------------|-------------|------------|--------------------------|
| TF2101M | 600V High-Side/Low-Side Gate Drive | 290mA/600mA | HIN/LIN | none | 160ns/150ns | 70ns/35ns | SOIC14(N)/SOIC8(N)/PDIP8 |
| TF2103M | 600V Half-Bridge Gate Driver | 290mA/600mA | HIN/LIN* | 520ns | 680ns/150ns | 70ns/35ns | SOIC8(N)/PDIP8 |
| TF2103A | 600V Half-Bridge Gate Driver | 210mA/360mA | HIN/LIN* | 520ns | 680ns/150ns | 100ns/50ns | SOIC8(N)/PDIP8 |
| TF2104M | 600V Half-Bridge Gate Driver | 290mA/600mA | IN/SD* | 520ns | 680ns/150ns | 70ns/35ns | SOIC8(N)/PDIP8 |
| TF2104A | 600V Half-Bridge Gate Driver | 210mA/360mA | IN/SD* | 520ns | 680ns/150ns | 100ns/50ns | SOIC8(N)/PDIP8 |
| TF2190M | 600V High-Side/Low-Side Gate Drive | 4.5A/4.5A | HIN/LIN | none | 140ns/140ns | 25ns/20ns | SOIC8(N) |
| TF21904M | 600V High-Side/Low-Side Gate Drive | 4.5A/4.5A | HIN/LIN | none | 140ns/140ns | 25ns/20ns | SOIC14(N) |
| TF2110M | 600V High-Side/Low-Side Gate Drive | 2.5A/2.5A | HIN/LIN/SD | none | 120ns/90ns | 25ns/17ns | SOIC16(W)/PDIP14 |
| TF2113M | 600V High-Side/Low-Side Gate Drive | 2.5A/2.5A | HIN/LIN/SD | none | 120ns/90ns | 25ns/17ns | SOIC16(W)/PDIP14 |
| TF2184M | 600V Half-Bridge Gate Driver | 1.9A/2.3A | IN/SD* | 400ns | 680ns/270ns | 40ns/20ns | SOIC8(N)/PDIP8 |
| TF21844M | 600V Half-Bridge Gate Driver | 1.9A/2.3A | IN/SD* | 400ns -5ms | 680ns/270ns | 40ns/20ns | SOIC14(N)/PDIP14 |
| TF2181M | 600V High-Side/Low-Side Gate Drive | 1.9A/2.3A | HIN/LIN | none | 180ns/220ns | 40ns/20ns | SOIC8(N)/PDIP8 |
| TF21814M | 600V High-Side/Low-Side Gate Drive | 1.9A/2.3A | HIN/LIN | none | 180ns/220ns | 40ns/20ns | SOIC14(N)/PDIP14 |
| TF2304M | 600V Half-Bridge Gate Drive | 290mA/600mA | HIN/LIN | 100ns | 150ns/150ns | 70ns/35ns | SOIC8(N)/PDIP8 |
| TF2117 | 600V Single Channel Driver | 290mA/600mA | IN | none | 160ns/125ns | 75ns/35ns | SOIC8(N)/PDIP8 |
| TF2118 | 600V Single Channel Driver | 290mA/600mA | IN* | none | 160ns/125ns | 75ns/35ns | SOIC8(N)/PDIP8 |
| TF2106M | 600V High-Side/Low-Side Gate Drive | 290mA/600mA | HIN/LIN | none | 220ns/200ns | 100ns/35ns | SOIC8(N)/PDIP8 |
| TF21064M | 600V High-Side/Low-Side Gate Drive | 200mA/600mA | HIN/LIN | none | 220ns/200ns | 100ns/35ns | SOIC14(N)/PDIP14 |
| TF2108M | 600V Half-Bridge Gate Driver | 290mA/600mA | HIN/LIN* | 540ns | 220ns/200ns | 100ns/35ns | SOIC8(N)/PDIP8 |
| TF21084M | 600V Half-Bridge Gate Driver | 200mA/600mA | HIN/LIN* | 540ns-5ms | 220ns/200ns | 100ns/35ns | SOIC14(N)/PDIP14 |

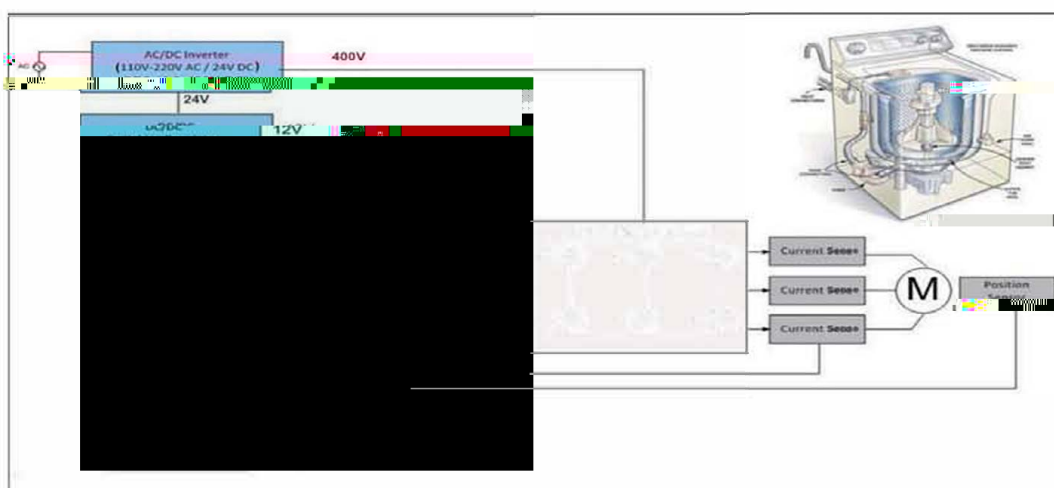


High Voltage Gate Driver ICs



Three Phase

| Part | Name | IO + / IO - | Inputs | Dead time | ton/toff | tr/ tf | Package |
|---------|-------------------------------------|---------------|--------------------|-----------|-------------|-----------|---------|
| TF23892 | 600V 3-Phase HalfBridge Gate Driver | 350mA / 650mA | HIN*(x3), UN*(x3) | 290ns | 270ns/270ns | 40ns/25ns | SOIC28 |
| TF2136M | 600V 3-Phase HalfBridge Gate Driver | 200mA / 350mA | HIN*(x3), UN*(x3) | 290ns | 330ns/330ns | 90ns/35ns | SOIC28 |
| TF2135M | 600V 3-Phase HalfBridge Gate Driver | 200mA / 350mA | HIN*(x3), L N*(x3) | 290ns | 330ns/330ns | 90ns/35ns | SOIC28 |
| TF2388M | 600V 3-Phase HalfBridge Gate Driver | 350mA / 650mA | HIN (x3), UN (x3) | 270ns | 130ns/150ns | 50ns/35ns | SOIC20 |



Mid Voltage Gate Driver ICs



Single Phase

| Part # | Name | IO + / IO - | Inputs | Dead time | ton/tof | tr/td | Package |
|---------|-------------------------------------|-------------|----------|-----------|-------------|------------|----------------|
| TF05791 | 100V High-Side/Low-Side Gate Driver | 1.5A/2.0A | HIN/UN | none | 80ns/80ns | 15ns/10ns | TDFN-10 |
| TF0503 | 100V Half-Bridge Gate Driver | 290mA/600mA | HIN/UN* | 520ns | 680ns/150ns | 70ns/35ns | TDFN-10 |
| TF0504 | 100V Half-Bridge Gate Driver | 290mA/600mA | IN/SD* | 520ns | 680ns/150ns | 70ns/35ns | TDFN-10 |
| TF0581 | 100V High-Side/Low-Side Gate Driver | 1.9A/2.3A | HIN/UN | none | 180ns/220ns | 40ns/20ns | TDFN-10 |
| TF0584 | 100V Half-Bridge Gate Driver | 1.9A/2.3A | IN/SD* | 400ns | 680ns/270ns | 40ns/20ns | TDFN-10 |
| TF1304 | 250V Half-Bridge Gate Driver | 290mA/600mA | HIN/UN | 100ns | 150ns/150ns | 70ns/35ns | SOIC8(N)/PDIP8 |
| TF1503 | 250V Half-Bridge Gate Driver | 290mA/600mA | HIN/LIN* | 520ns | 680ns/150ns | 70ns/35ns | SOIC8(N) |
| TF1504 | 250V Half-Bridge Gate Driver | 290mA/600mA | IN/SO* | 520ns | 680ns/150ns | 70ns/35ns | SOIC8(N) |
| TF1581 | 250V High-Side/Low-Side Gate Driver | 1.9A/2.3A | HIN/UN | none | 180ns/220ns | 40ns/20ns | SOIC8(N) |
| TF1584 | 250V Half-Bridge Gate Driver | 1.9A/2.3A | IN/SD* | 400ns | 680ns/270ns | 40ns/20ns | SOIC8(N) |
| TF2003M | 200V Half-Bridge Gate Driver | 290mA/600mA | HIN/UN* | 420ns | 680ns/150ns | 70ns/35ns | SOIC8(N) |
| TF2005M | 200V High-Side/Low-Side Gate Driver | 290mA/600mA | HIN/UN | none | 220ns/200ns | 100ns/35ns | SOIC8(N) |
| TF2007M | 200V Half-Bridge Gate Driver | 290mA/600mA | HIN/UN | 420ns | 100ns/100ns | 70ns/35ns | SOIC8(N) |
| TF2011M | 200V High-Side/Low-Side Gate Driver | 290mA/600mA | HIN/UN | none | 120ns/120ns | 30ns/30ns | SOIC8(N) |
| TF2012M | 200V High-Side/Low-Side Gate Driver | 290mA/600mA | HIN/UN | none | 180ns/200ns | 40ns/20ns | SOIC8(N) |



Mid Voltage Gate Driver ICs



Three Phase Gate Drivers & Stepper Motor Controller

| Part | Name | IO+/IO- | Inputs | Deadtime | ton/toff | tr/td | Package |
|--------|-------------------------------------|-------------|--------------------|----------|-------------|------------|---------|
| TF1692 | 250V 3-Phase HalfBridge Gate Driver | 350mA/650mA | HIN*(x3), LIN*(x3) | 290ns | 500ns/500ns | 50ns/30ns | SOIC28 |
| TF0692 | 100V 3-Phase HalfBridge Gate Driver | 350mA/650mA | HIN*(x3), LIN*(x3) | 290ns | 500ns/500ns | 50ns/30ns | SOIC28 |
| TF1636 | 250V 3-Phase HalfBridge Gate Drive | 200mA/350mA | HIN*(x3), LIN*(x3) | 290ns | 500ns/500ns | 125ns/50ns | SOIC28 |
| TF0636 | 100V 3-Phase HalfBridge Gate Drive | 200mA/350mA | HIN*(x3), LIN*(x3) | 290ns | 500ns/500ns | 125ns/50ns | SOIC28 |
| TF2098 | 200V 3-Phase HalfBridge Gate Driver | 350mA/650mA | HIN*(x3), LIN*(x3) | 270ns | 130ns/150ns | 50ns/35ns | SOIC20 |



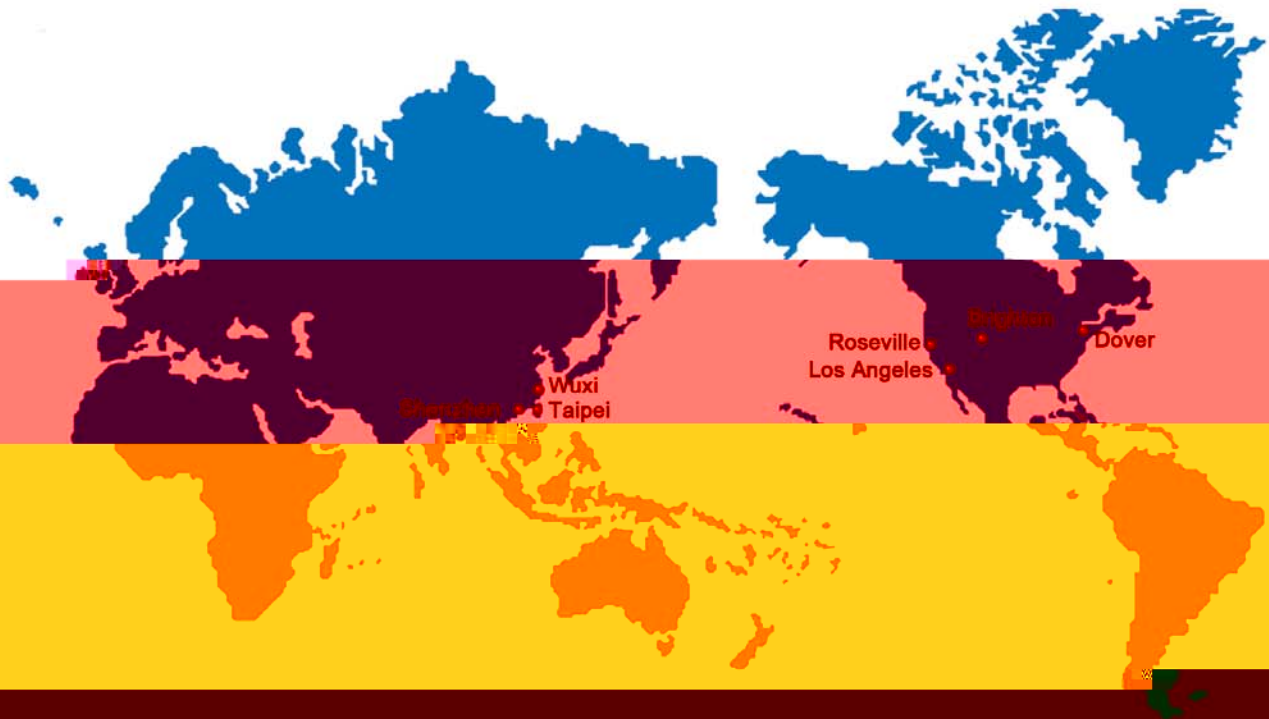
IPM for 3-Phase Motor Drive

| Part | Name | IC Each IGBT | V _{CE} Collector to |
|------|------------------------------|--------------|------------------------------|
| | Motor Drive | | |
| | 600V Half-Bridge Gate Driver | 10A | 600V |

* 产品持续开发中



· Perfect · Innovation · Profession
· Perfect · Innovation · Profession



 www.pipsemi.com

Mobile: +86 186 172 1763 (Wuxi)

Mobile: +86 186 1701 1677 (Shenzhen)

Mobile: +86 932 000 416 (Taipei)

Email: sales@pipsemi.com

无锡市滨湖区五湖大道11号蠡湖科创中心

深圳市南山区科技中二路深圳软件园一期4栋

Taiwan 2F, NO.488, Guoqiang 1st St, Taoyuan City, Taoyuan County

USA 36 South 16th Avenue, Suite A, Brighton, CO 80601