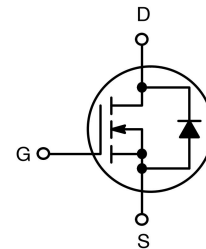
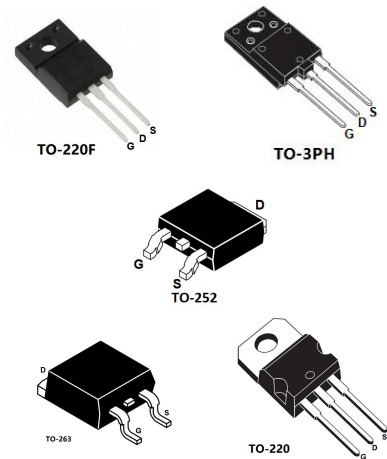


General features

| Type | V _{DSS} (@T _{jmax}) | R _{DS(on)} | I _D |
|-----------|--|---------------------|----------------|
| MS5N100 | 1000 V | < 4.2 Ω | 5A |
| MS5N100S | 1000 V | < 4.2 Ω | 5A |
| MS5N100FT | 1000 V | < 4.2 Ω | 5A |
| MS5N100FE | 1000 V | < 4.2 Ω | 5A |
| MS5N100FD | 1000 V | < 4.2 Ω | 5A |

- Extremely high dv/dt capability
- 100% avalanche tested
- Gate charge minimized
- Very low intrinsic capacitances
- Very good manufacturing repeatability



Applications

- Switching application

Order codes

| Partnumber | Marking | Package |
|------------|-----------|--------------|
| MS5N100 | MS5N100 | TO-3PH |
| MS5N100S | MS5N100S | TO-220F |
| MS5N100FT | MS5N100FT | TO-220 |
| MS5N100FE | MS5N100FE | TO-263/D2PAK |
| MS5N100FD | MS5N100FD | TO-252/DPAK |

Electrical ratings

Absolute maximum ratings

| Parameter | Symbol | Value | | | | Unit |
|---|-----------------|--------|----------|-------------------|--------|------|
| | | TO-3PH | TO-220FP | TO-220/ TO-252 | TO-263 | |
| Drain-source voltage (V _{GS} =0) | V _{DS} | 1000 | | | | V |
| Gate-source voltage | V _{GS} | ±30 | | | | |
| Drain current (continuous) at TC=25°C | I _D | 5 | | | | A |
| Drain current (continuous) at TC=100°C | I _D | 3 | | | | |
| Drain current (pulsed) | I _{DM} | 18 | 18 | 18 | 18 | |
| Total dissipation at TC=25°C | PTOT | 125 | 30 | 68 | 56 | W |
| Derating factor | | 1 | 0.24 | 1 | 0.63 | W/°C |

| | | | |
|---|---------------|------------|------|
| Drain source ESD (HBM-C=100pF,R=1.5KΩ) | $V_{ESD(GS)}$ | 4000 | V |
| Peak diode recovery voltage slope | dv/dt | 4.5 | V/ns |
| Insulation withstand voltage(RMS)from all three leads to external heat sink (t=1s TC=25°C) | V_{ISO} | 2500 | v |
| Operating junction temperature | T_J | -55 to 175 | °C |
| Storage temperature | T_{STG} | | |

Thermal data

| Parameter | Symbol | Value | | | | Unit |
|---|-----------|----------|--------|-------------------|--------|------|
| | | TO-220FP | TO-3PH | TO-220/ TO-252 | TO-263 | |
| Thermal resistance junction max | Rthj-case | 4.2 | 1 | 1 | 0.86 | °C/W |
| Thermal resistance junction-ambient max | Rthj-case | 5 | | | | A |
| Maximum lead temperature for soldering purpose | T | 350 | | | | mJ |

Avalanche characteristics

| Parameter | Symbol | Value | Unit |
|---|----------|-------|------|
| Avalanche current repetitive or not-repetitive (pulse width limited by Tj Max) | I_{AR} | 5 | A |
| Single pulse avalanche energy (starting Tj=25°C Id=Iar Vdd=50V) | E_{AS} | 350 | mJ |

Electrical characteristics ($T_{CASE}=25^{\circ}C$ unless otherwise specified)

On/off states

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|---|---------------|--------------------------------|------|-----|----------|----------|
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $I_D=1mA$ $V_{GS}=0$ | 1000 | | | V |
| Zero gate voltage drain current ($V_{GS}=0$) | I_{DSS} | $V_{DS}=\text{Max rating}$ | | | 1 | μA |
| | | $T_C=125^{\circ}C$ | | | 50 | μA |
| Gate body leakage current ($V_{GS}=0$) | I_{GSS} | $V_{GS}=\pm 20V$ | | | ± 10 | μA |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}$ $I_D=100\mu A$ | 3 | 3.5 | 4.5 | V |
| Static drain-source on resistance | $R_{DS(on)}$ | $V_{GS}=10V$ $I_D=1.75A$ | | 3.5 | 4.2 | Ω |

Dynamic

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|-------------------------------|----------------|--|-----|------|-----|----------|
| Forward transconductance | g_{fs} | $V_{DS} = 15 V, I_D = 1.75A$ | | 3 | | S |
| Input capacitance | C_{iss} | $V_{DS}=25V, f=1MHz, V_{GS}=0$ | | 1154 | | pF |
| Output capacitance | C_{oss} | | | 106 | | |
| Reverse transfer capacitance | C_{rss} | | | 21.3 | | |
| Equivalent Output capacitance | $C_{oss\ eq.}$ | $V_{GS}=0, V_{DS}=0$ to 800V | | 46.8 | | |
| Gate input resistance | R_g | $f=1MHz$ Gate DC Bias=0 Test signal level=20mV open drain | | 2.2 | | Ω |
| Total gate charge | Q_g | $V_{DD}=800V, I_D=3.5A$ $V_{GS}=10V$ | | 42 | | nC |
| Gate-source charge | Q_{gs} | | | 7.3 | | |
| Gate-drain charge | Q_{gd} | | | 21.7 | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD} = 500 V, I_D = 1.75 A,$ $R_G = 4.7 \Omega, V_{GS} = 10 V$ | | 22.5 | | ns |
| Rise time | t_r | | | 7.7 | | |
| Turn-off-delay time | $t_{d(off)}$ | | | 51.5 | | |
| Fall time | t_f | | | 19 | | |

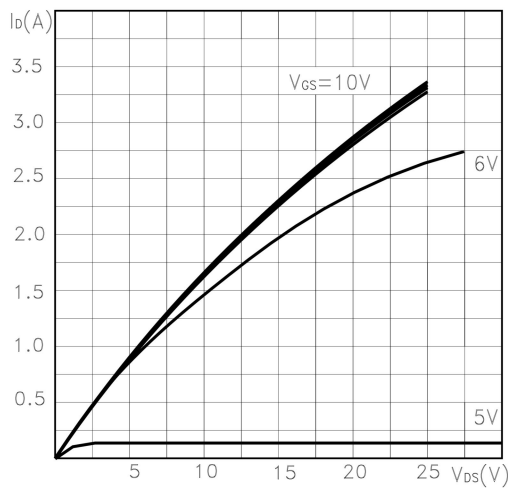
Source Drain Diode

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|----------------------|----------|-----------------|-----|-----|-----|------|
| Source Drain Current | I_{SD} | | | | 5 | A |

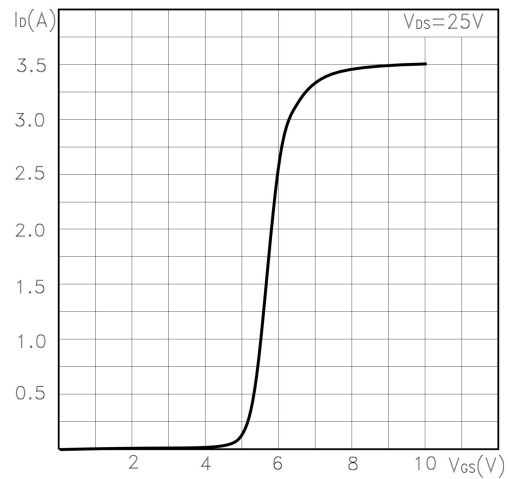
| | | | | | |
|------------------------------|-----------|-------------------------------|-----|-----|---------|
| Source Drain Current(Pulsed) | I_{SDM} | | | 20 | A |
| Forward On Voltage | V_{SD} | $I_{SD}=5A, V_{GS}=0V$ | | 1.2 | V |
| Reverse Recovery Time | T_{rr} | $I_{SD}=4A, di/dt=100A/\mu S$ | 500 | | ns |
| Reverse Recovery Charge | Q_{rr} | $V_R=100V, T_j=150^\circ C$ | 4.3 | | μC |
| Reverse Recovery Current | I_{RRM} | | 20 | | A |

Electrical characteristics (curves)

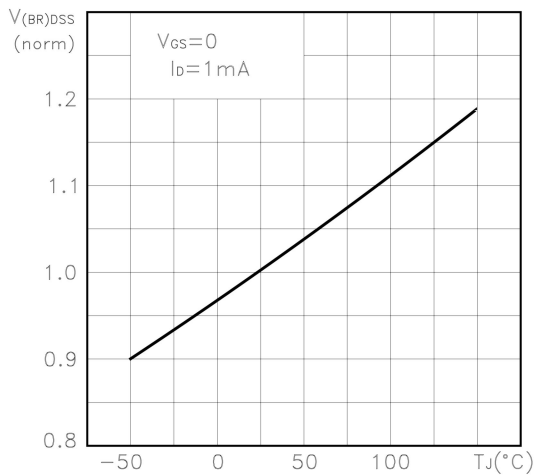
Output characteristics



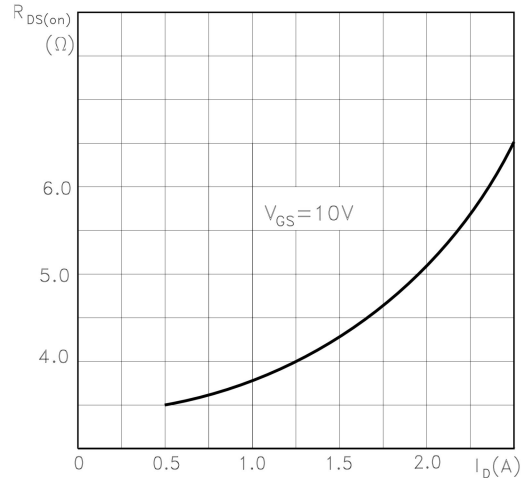
Transfer characteristics



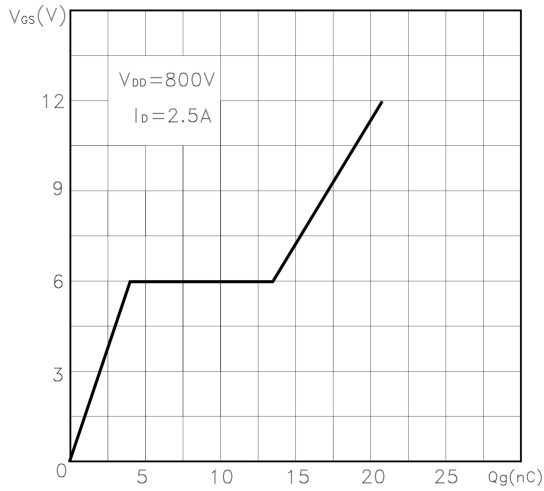
Normalized BV_{DSS} vs. temperature



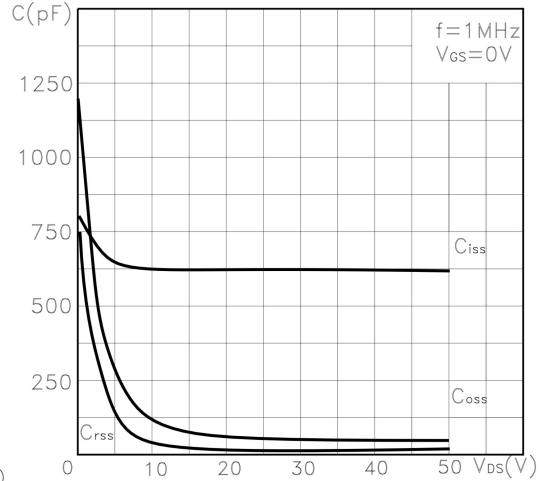
Static drain-source on resistance



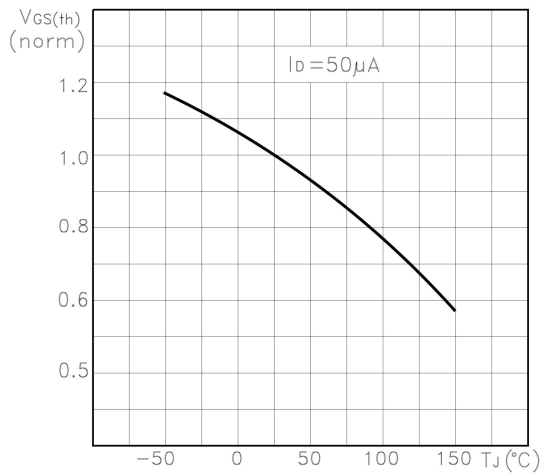
Gate charge vs. gate-source voltage



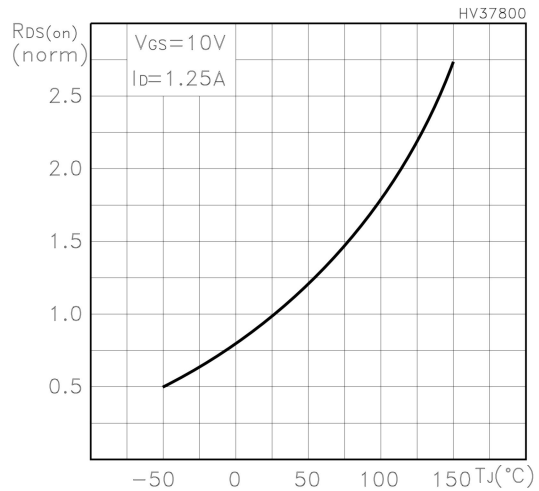
Capacitance variations



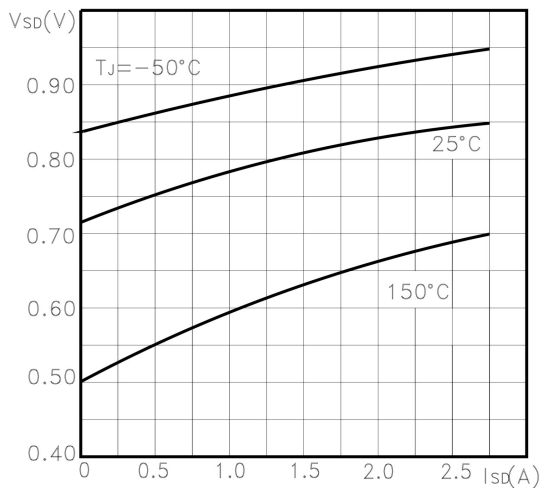
Normalized gate threshold voltage vs. temperature



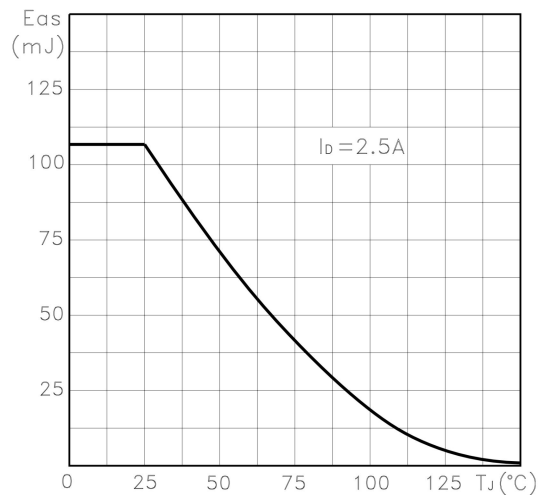
Normalized on resistance vs. temperature



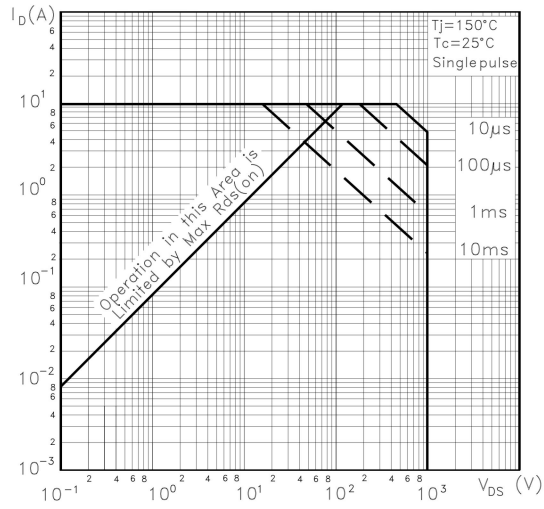
Source-drain diode forward characteristics



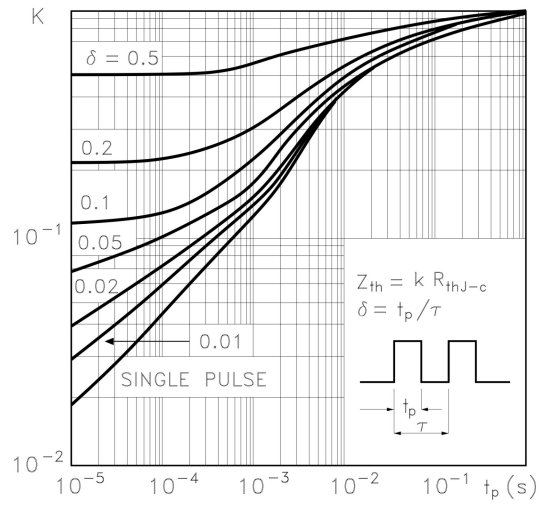
Maximum avalanche energy vs Tj



Safe operating area

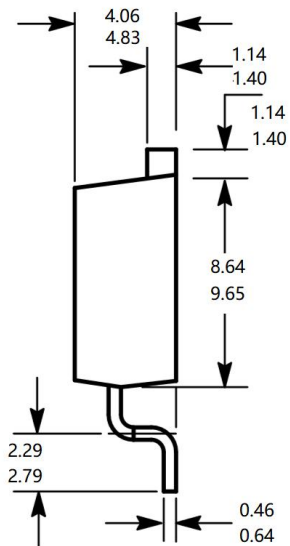
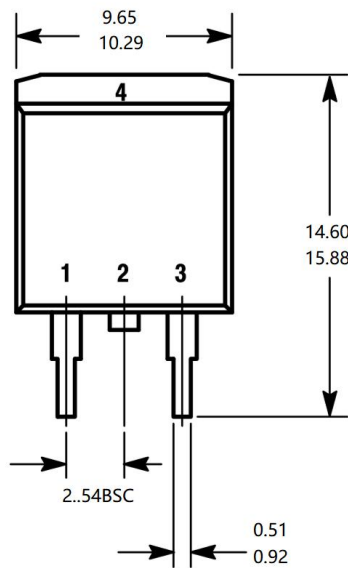


Thermal impedance

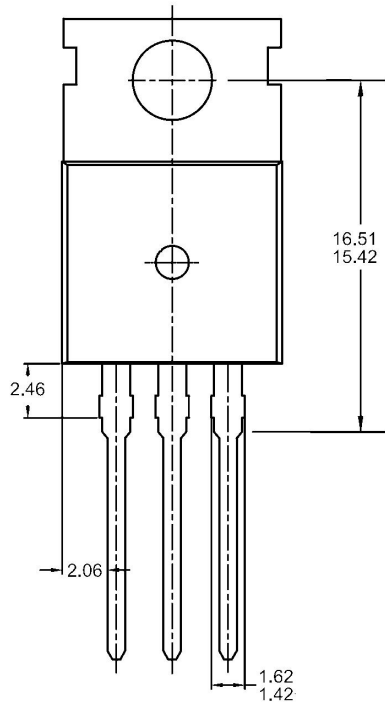


Package outline dimension

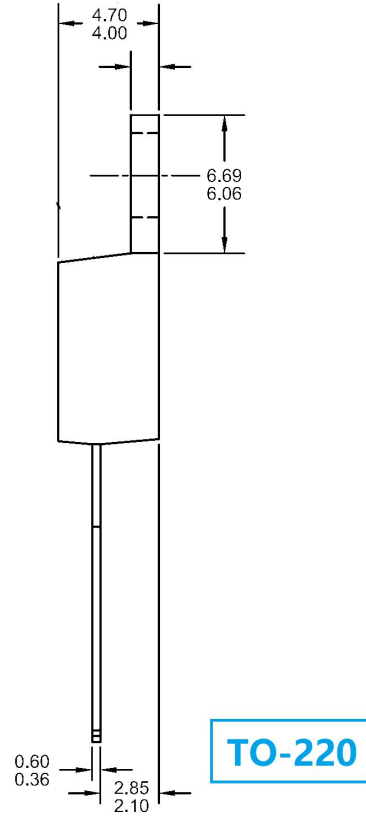
TO-263/D2PAK



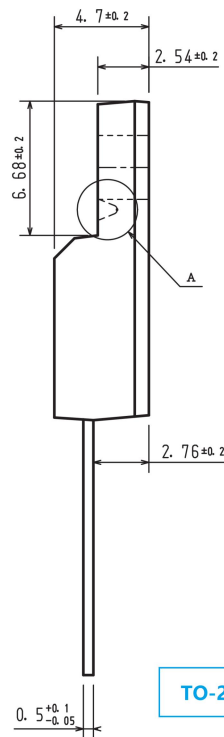
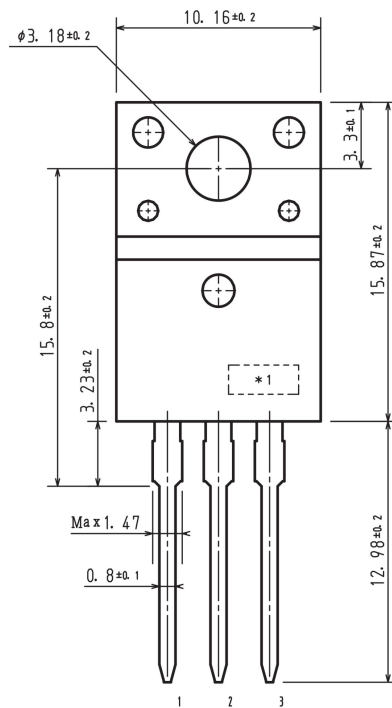
TO-263/D2PAK



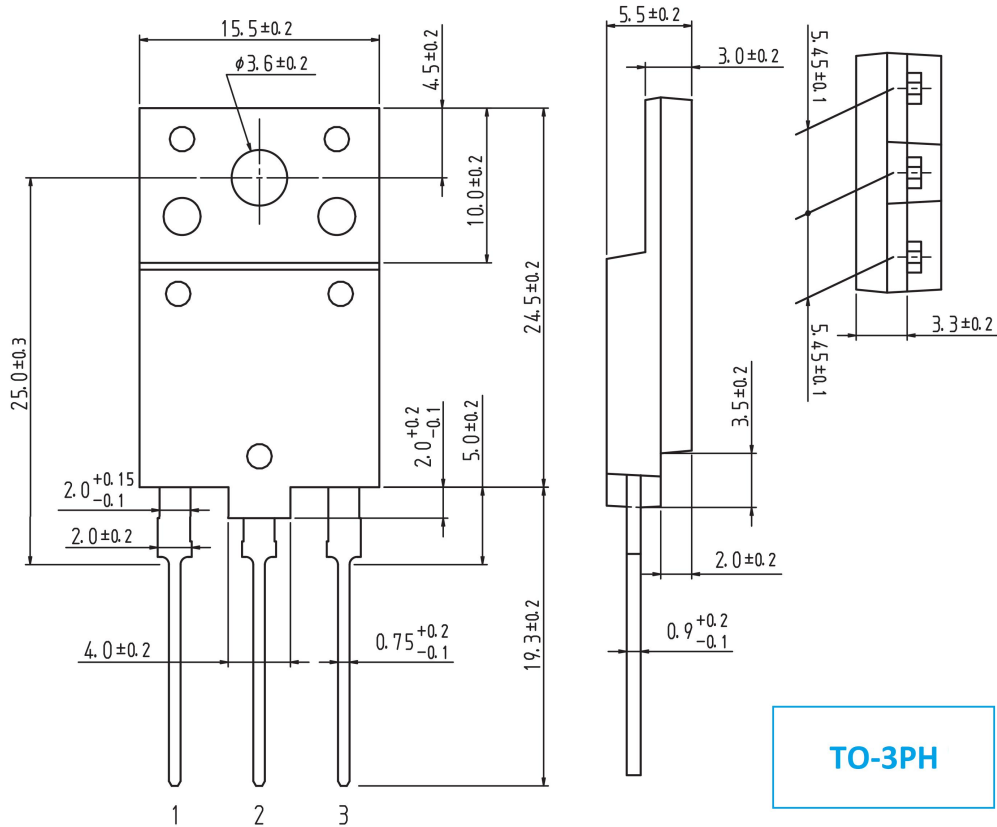
TO-220



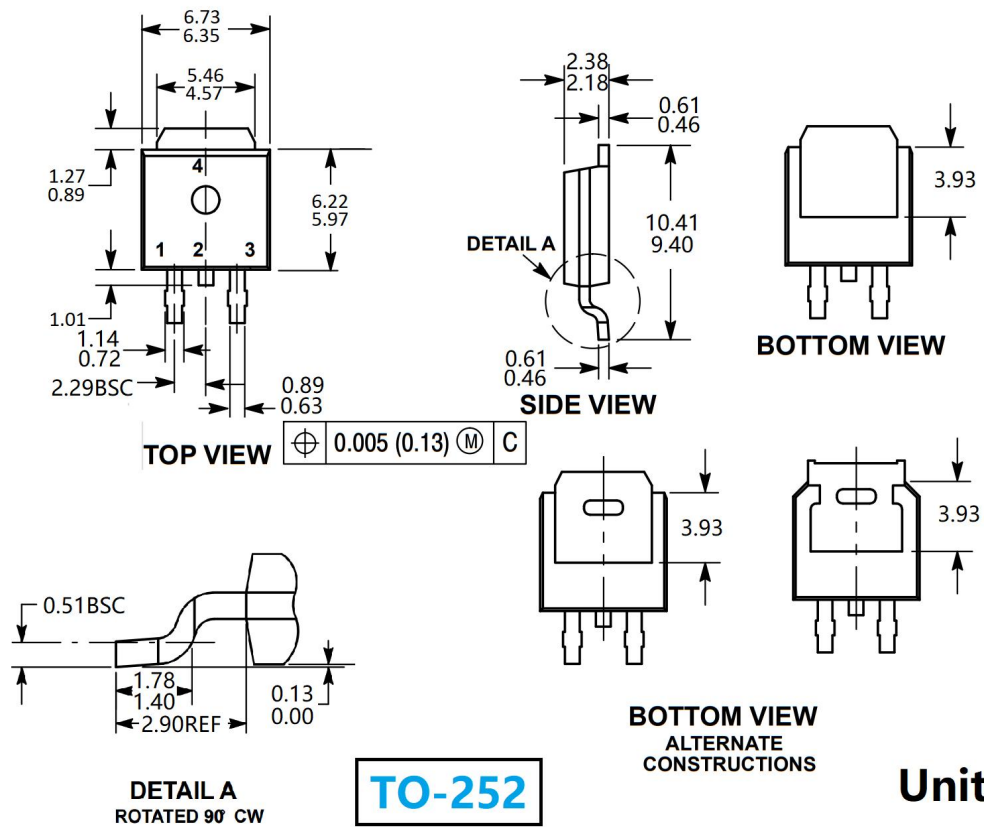
TO-220



TO-220F



TO-3PH



TO-252

**BOTTOM VIEW
 ALTERNATE
 CONSTRUCTIONS**

Unit:mm

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [MOSFET](#) category:

Click to view products by [MASPOWER](#) manufacturer:

Other Similar products are found below :

[IRFD120](#) [IRFY240C](#) [JANTX2N5237](#) [BUK455-60A/B](#) [MIC4420CM-TR](#) [VN1206L](#) [NDP4060](#) [SI4482DY](#) [IPS70R2K0CEAKMA1](#)
[SQD23N06-31L-GE3](#) [TK16J60W,S1VQ\(O](#) [2SK2614\(TE16L1,Q\)](#) [DMN1017UCP3-7](#) [EFC2J004NUZTDG](#) [DMN1053UCP4-7](#) [SQJ469EP-](#)
[T1-GE3](#) [NTE2384](#) [DMC2700UDMQ-7](#) [DMN2080UCB4-7](#) [DMN61D9UWQ-13](#) [US6M2GTR](#) [DMN31D5UDJ-7](#) [DMP22D4UFO-7B](#)
[DMN1006UCA6-7](#) [DMN16M9UCA6-7](#) [STF5N65M6](#) [IRF40H233XTMA1](#) [STU5N65M6](#) [DMN6022SSD-13](#) [DMN13M9UCA6-7](#)
[DMTH10H4M6SPS-13](#) [DMN2990UFB-7B](#) [IPB80P04P405ATMA2](#) [2N7002W-G](#) [MCAC30N06Y-TP](#) [MCQ7328-TP](#) [NTMC083NP10M5L](#)
[NVMFS2D3P04M8LT1G](#) [BXP7N65D](#) [BXP4N65F](#) [AOL1454G](#) [WMJ80N60C4](#) [BXP2N20L](#) [BXP2N65D](#) [BXT1150N10J](#) [BXT1700P06M](#)
[TSM60NB380CP](#) [ROG](#) [RQ7L055BGTCR](#) [DMNH15H110SK3-13](#) [SLF10N65ABV2](#)