

| PRODUCT SUMMARY | | | |
|---------------------|-----------------------------------|------------------------------------|----------------------|
| V _{DS} (V) | R _{DS(on)} (Ω) | I _D (A) ^{a, e} | Q _g (Typ) |
| 30 | 0.0021 at V _{GS} = 10 V | 140 | 92 nC |
| | 0.0029 at V _{GS} = 4.5 V | 130 | |

FEATURES

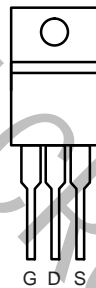
- DT-Trench Power MOSFET
- 100 % R_g and UIS Tested
- Compliant to RoHS Directive 2011/65/EU



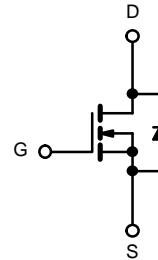
APPLICATIONS

- OR-ing
- Server
- DC/DC

TO-220AB



Top View



N-Channel MOSFET

| ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C, unless otherwise noted) | | | |
|---|-----------------------------------|------------------------|----------------------|
| Parameter | Symbol | Limit | Unit |
| Drain-Source Voltage | V _{DS} | 30 | V |
| Gate-Source Voltage | V _{GS} | ± 20 | |
| Continuous Drain Current (T _J = 175 °C) | I _D | T _C = 25 °C | 140 ^{a, e} |
| | | T _C = 70 °C | 110 ^e |
| | | T _A = 25 °C | 39 ^{b, c} |
| | | T _A = 70 °C | 28 ^{b, c} |
| Pulsed Drain Current | I _{DM} | 370 | A |
| Avalanche Current Pulse | I _{AS} | 39 | |
| Single Pulse Avalanche Energy | E _{AS} | 375 | |
| Continuous Source-Drain Diode Current | I _S | T _C = 25 °C | 90 ^{a, e} |
| | | T _A = 25 °C | 3.13 ^{b, c} |
| Maximum Power Dissipation | P _D | T _C = 25 °C | 250 ^a |
| | | T _C = 70 °C | 175 |
| | | T _A = 25 °C | 3.75 ^{b, c} |
| | | T _A = 70 °C | 2.63 ^{b, c} |
| Operating Junction and Storage Temperature Range | T _J , T _{stg} | - 55 to 175 | °C |

| THERMAL RESISTANCE RATINGS | | | | | |
|---|-------------------|------|------|------|--|
| Parameter | Symbol | Typ. | Max. | Unit | |
| Maximum Junction-to-Ambient ^{b, d} | R _{thJA} | 32 | 40 | °C/W | |
| Maximum Junction-to-Case | R _{thJC} | 0.5 | 0.6 | | |

Notes:

a. Based on T_C = 25 °C.

b. Surface mounted on 1" x 1" FR4 board.

c. t = 10 sec.

d. Maximum under steady state conditions is 90 °C/W.

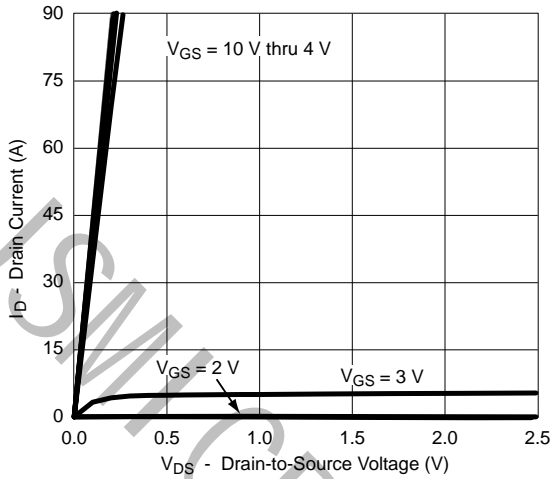
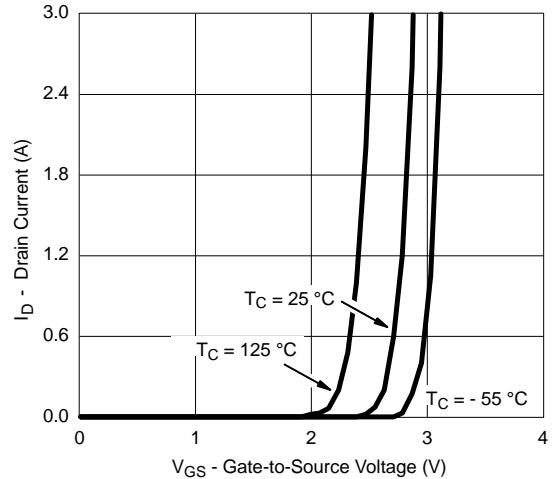
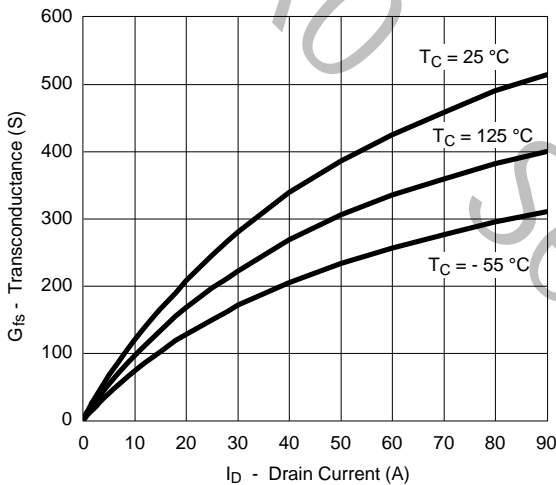
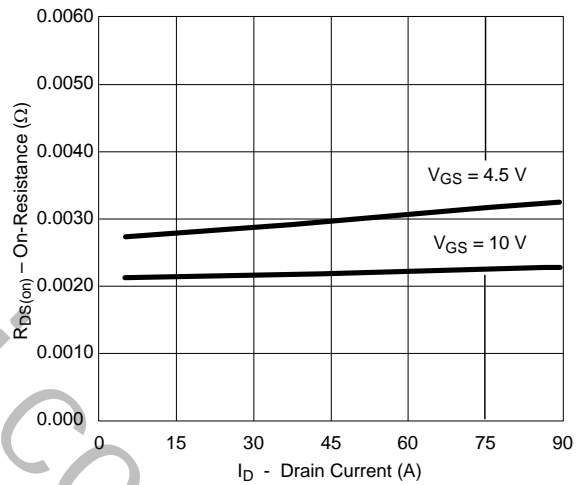
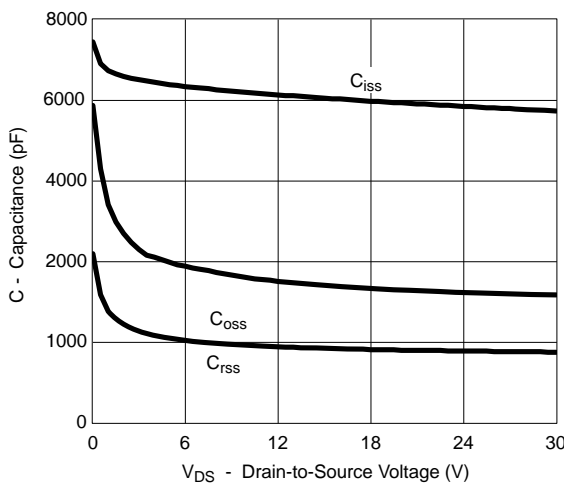
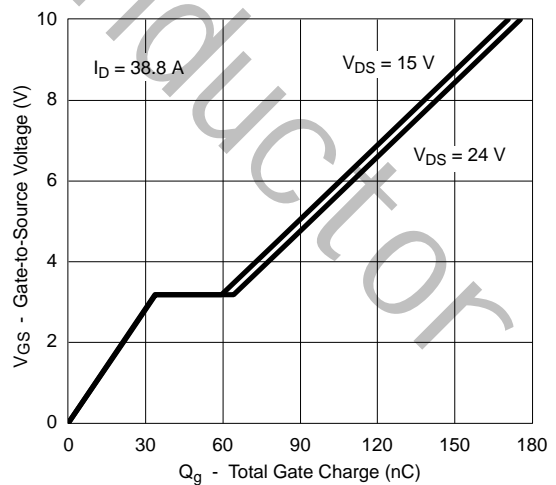
e. Calculated based on maximum junction temperature. Package limitation current is 90 A.

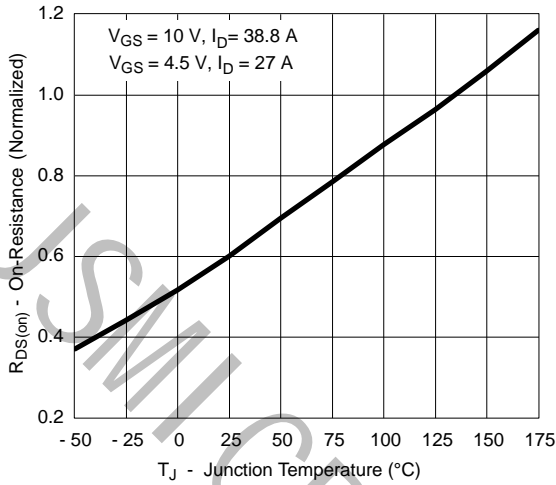
| SPECIFICATIONS ($T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted) | | | | | | |
|--|-------------------------|--|--------------------|--------|-----------|----------------------|
| Parameter | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
| Static | | | | | | |
| Drain-Source Breakdown Voltage | V_{DS} | $V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$ | 30 | | | V |
| V_{DS} Temperature Coefficient | $\Delta V_{DS}/T_J$ | $I_D = 250\text{ }\mu\text{A}$ | | 35 | | mV/ $^\circ\text{C}$ |
| $V_{GS(th)}$ Temperature Coefficient | $\Delta V_{GS(th)}/T_J$ | | | -7.5 | | |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$ | 1.0 | | 3.0 | V |
| Gate-Source Leakage | I_{GSS} | $V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$ | | | 1 | μA |
| | | $V_{DS} = 24\text{ V}, V_{GS} = 0\text{ V}, T_J = 55\text{ }^\circ\text{C}$ | | | 10 | |
| On-State Drain Current ^a | $I_{D(on)}$ | $V_{DS} \geq 5\text{ V}, V_{GS} = 10\text{ V}$ | 90 | | | A |
| Drain-Source On-State Resistance ^a | $R_{DS(on)}$ | $V_{GS} = 10\text{ V}, I_D = 38.8\text{ A}$ | | 0.0021 | | Ω |
| | | $V_{GS} = 4.5\text{ V}, I_D = 37\text{ A}$ | | 0.0029 | | |
| Forward Transconductance ^a | g_{fs} | $V_{DS} = 15\text{ V}, I_D = 38.8\text{ A}$ | | 160 | | S |
| Dynamic^b | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS} = 15\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$ | | 6201 | | pF |
| Output Capacitance | C_{oss} | | | 1725 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 970 | | |
| Total Gate Charge | Q_g | $V_{DS} = 15\text{ V}, V_{GS} = 10\text{ V}, I_D = 38.8\text{ A}$ | | 171 | 257 | nC |
| | | | | 81.5 | 123 | |
| Gate-Source Charge | Q_{gs} | $V_{DS} = 15\text{ V}, V_{GS} = 4.5\text{ V}, I_D = 28.8\text{ A}$ | | 34 | | |
| Gate-Drain Charge | Q_{gd} | | | 29 | | |
| Gate Resistance | R_g | | $f = 1\text{ MHz}$ | | 1.4 | 2.1 |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD} = 15\text{ V}, R_L = 0.625\text{ }\Omega$ $I_D \cong 24\text{ A}, V_{GEN} = 10\text{ V}, R_g = 1\text{ }\Omega$ | | 18 | 27 | ns |
| Rise Time | t_r | | | 11 | 17 | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 70 | 105 | |
| Fall Time | t_f | | | 10 | 15 | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD} = 15\text{ V}, R_L = 0.67\text{ }\Omega$ $I_D \cong 22.5\text{ A}, V_{GEN} = 4.5\text{ V}, R_g = 1\text{ }\Omega$ | | 55 | 83 | |
| Rise Time | t_r | | | 180 | 270 | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 55 | 83 | |
| Fall Time | t_f | | | 12 | 18 | |
| Drain-Source Body Diode Characteristics | | | | | | |
| Continuous Source-Drain Diode Current | I_S | $T_C = 25\text{ }^\circ\text{C}$ | | 140 | | A |
| Pulse Diode Forward Current ^a | I_{SM} | | | 370 | | |
| Body Diode Voltage | V_{SD} | $I_S = 22\text{ A}$ | | 0.8 | 1.2 | V |
| Body Diode Reverse Recovery Time | t_{rr} | $I_F = 20\text{ A}, di/dt = 100\text{ A}/\mu\text{s}, T_J = 25\text{ }^\circ\text{C}$ | | 52 | 78 | ns |
| Body Diode Reverse Recovery Charge | Q_{rr} | | | 70.2 | 105 | nC |
| Reverse Recovery Fall Time | t_a | | | 27 | | ns |
| Reverse Recovery Rise Time | t_b | | | 25 | | |

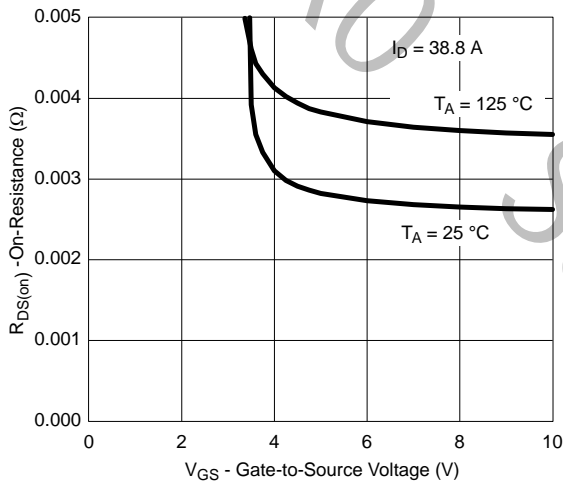
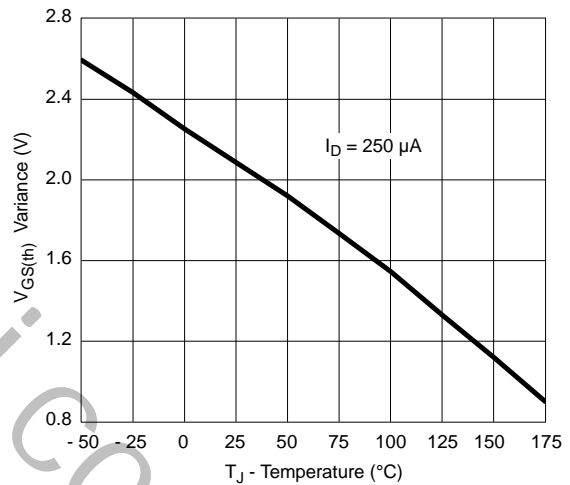
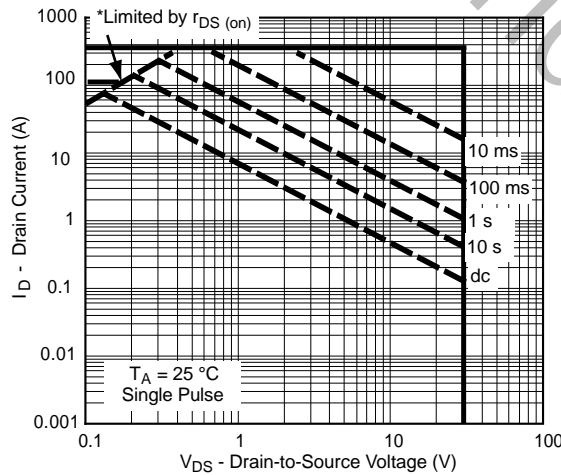
Notes:

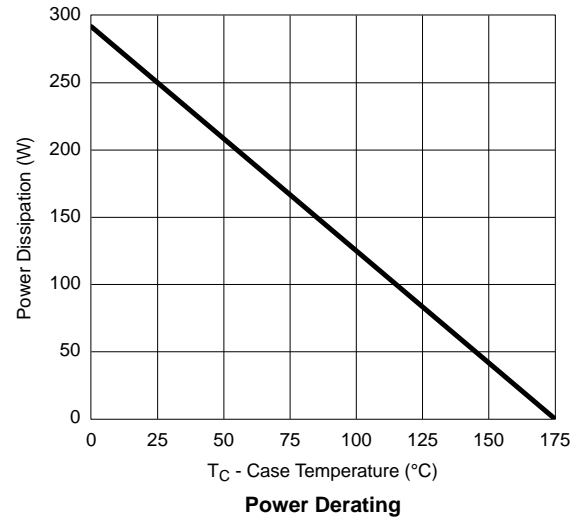
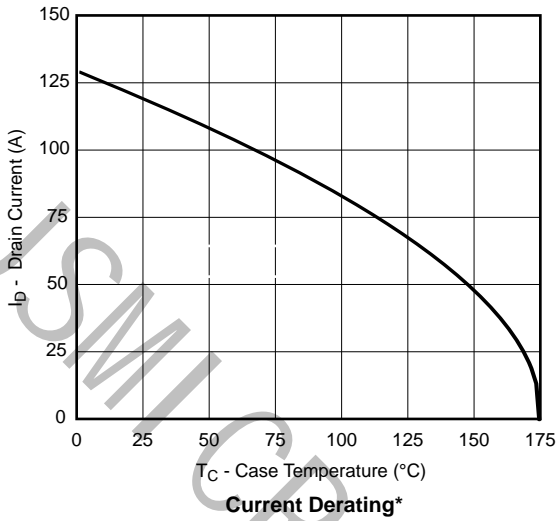
- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
 b. Guaranteed by design, not subject to production testing.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

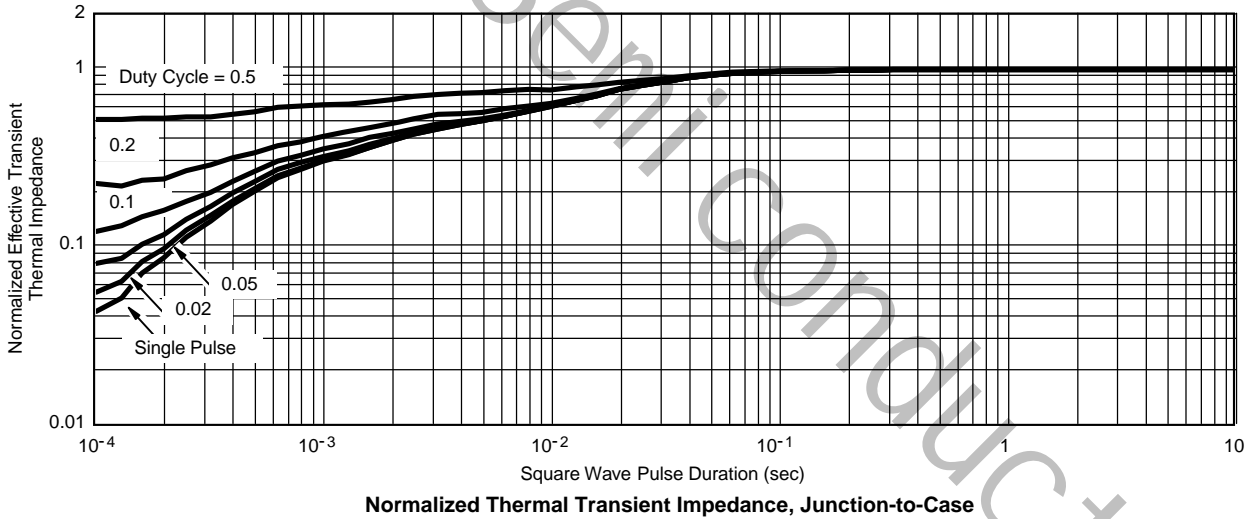
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

Output Characteristics

Transfer Characteristics

Transconductance

 $R_{DS(on)}$ vs. Drain Current

Capacitance

Gate Charge

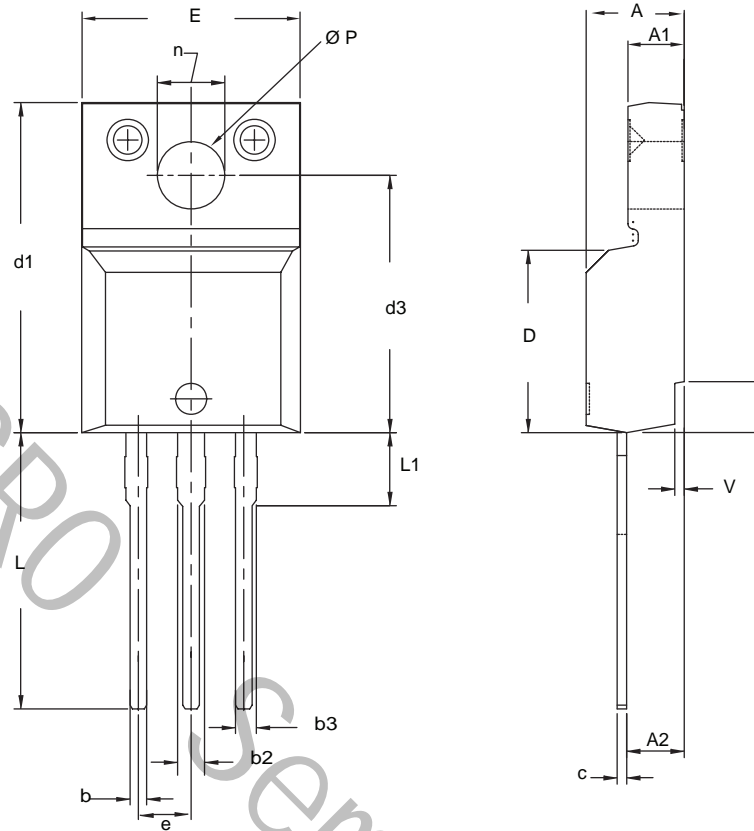
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

On-Resistance vs. Junction Temperature

Forward Diode Voltage vs. Temperature

 $R_{DS(on)}$ vs. V_{GS} vs. Temperature

Threshold Voltage

Safe Operating Area, Junction-to-Ambient

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)


*The power dissipation P_D is based on $T_{J(max)} = 175\text{ °C}$, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.



TO-220 FULLPAK (HIGH VOLTAGE)


| DIM. | MILLIMETERS | | INCHES | |
|------|-------------|--------|-----------|-------|
| | MIN. | MAX. | MIN. | MAX. |
| A | 4.570 | 4.830 | 0.180 | 0.190 |
| A1 | 2.570 | 2.830 | 0.101 | 0.111 |
| A2 | 2.510 | 2.850 | 0.099 | 0.112 |
| b | 0.622 | 0.890 | 0.024 | 0.035 |
| b2 | 1.229 | 1.400 | 0.048 | 0.055 |
| b3 | 1.229 | 1.400 | 0.048 | 0.055 |
| c | 0.440 | 0.629 | 0.017 | 0.025 |
| D | 8.650 | 9.800 | 0.341 | 0.386 |
| d1 | 15.88 | 16.120 | 0.622 | 0.635 |
| d3 | 12.300 | 12.920 | 0.484 | 0.509 |
| E | 10.360 | 10.630 | 0.408 | 0.419 |
| e | 2.54 BSC | | 0.100 BSC | |
| L | 13.200 | 13.730 | 0.520 | 0.541 |
| L1 | 3.100 | 3.500 | 0.122 | 0.138 |
| n | 6.050 | 6.150 | 0.238 | 0.242 |
| Ø P | 3.050 | 3.450 | 0.120 | 0.136 |
| u | 2.400 | 2.500 | 0.094 | 0.098 |
| v | 0.400 | 0.500 | 0.016 | 0.020 |

 ECN: X09-0126-Rev. B, 26-Oct-09
 DWG: 5972

Notes

1. To be used only for process drawing.
2. These dimensions apply to all TO-220, FULLPAK leadframe versions 3 leads.
3. All critical dimensions should C meet $C_{pk} > 1.33$.
4. All dimensions include burrs and plating thickness.
5. No chipping or package damage.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

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

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

Other Similar products are found below :

[IRFD120](#) [JANTX2N5237](#) [BUK455-60A/B](#) [MIC4420CM-TR](#) [VN1206L](#) [NDP4060](#) [SI4482DY](#) [IPS70R2K0CEAKMA1](#) [SQD23N06-31L-GE3](#)
[TK16J60W,S1VQ\(O](#) [2SK2614\(TE16L1,Q\)](#) [DMN1017UCP3-7](#) [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](#) [BXP7N65D](#) [BXP4N65F](#) [AOL1454G](#)
[WMJ80N60C4](#) [BXP2N20L](#) [BXP2N65D](#) [BXT1150N10J](#) [BXT1700P06M](#) [TSM60NB380CP](#) [ROG](#) [RQ7L055BGTGR](#) [DMNH15H110SK3-13](#)
[SLF10N65ABV2](#) [BSO203SP](#) [BSO211P](#) [IPA60R230P6](#)