



SPN3632

N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN3632 is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology.

This high density process is especially tailored to minimize on-state resistance.

These devices are particularly suited for low voltage application , notebook computer power management and other battery powered circuits where high-side switching .

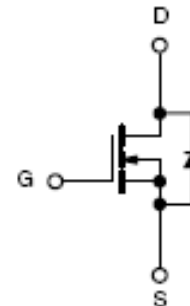
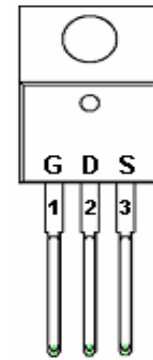
FEATURES

- ◆ 100V/80A, $R_{DS(ON)} = 8.5m\Omega @ V_{GS} = 10V$
- ◆ 100V/40A, $R_{DS(ON)} = 9.8m\Omega @ V_{GS} = 6.0V$
- ◆ 100V/10A, $R_{DS(ON)} = 10m\Omega @ V_{GS} = 4.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ TO-220-3L package design

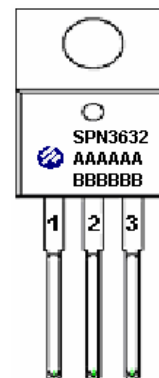
APPLICATIONS

- DC/DC Converter
- Load Switch
- SMPS Secondary Side Synchronous Rectifier

PIN CONFIGURATION(TO-220-3L)



PART MARKING



A : Lot Code
 B : Date Code
 (YY / MM / DD)



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PIN DESCRIPTION

| Pin | Symbol | Description |
|-----|--------|-------------|
| 1 | G | Gate |
| 2 | D | Drain |
| 3 | S | Source |

ORDERING INFORMATION

| Part Number | Package | Part Marking |
|----------------|-----------|--------------|
| SPN3632T220TGB | TO-220-3L | SPN3632 |

※ SPN3632T220TGB: Tube ; Pb – Free; Halogen – Free

ABSOLUTE MAXIMUM RATINGS

($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

| Parameter | Symbol | Typical | Unit | |
|---|-----------------|--------------------------|-----------------------------|---|
| Drain-Source Voltage | V_{DSS} | 100 | V | |
| Gate –Source Voltage | V_{GSS} | ± 20 | V | |
| Continuous Drain Current($T_J=150^{\circ}\text{C}$) | I_D | $T_A=25^{\circ}\text{C}$ | 80 | A |
| | | $T_A=70^{\circ}\text{C}$ | 80 | |
| Pulsed Drain Current | I_{DM} | 240 | A | |
| Avalanche Current | I_{AS} | 60 | A | |
| Power Dissipation | P_D | $T_A=25^{\circ}\text{C}$ | 62.5 | W |
| | | $T_A=70^{\circ}\text{C}$ | 3.38 | |
| Avalanche Energy with Single Pulse ($T_J=25^{\circ}\text{C}$, $L = 0.12\text{mH}$, $I_{AS} = 75\text{A}$, $V_{DD} = 80\text{V}$.) | E_{AS} | 335 | mJ | |
| Operating Junction Temperature | T_J | -55/150 | $^{\circ}\text{C}$ | |
| Storage Temperature Range | T_{STG} | -55/150 | $^{\circ}\text{C}$ | |
| Thermal Resistance-Junction to Ambient | $R_{\theta JA}$ | 2 | $^{\circ}\text{C}/\text{W}$ | |



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ELECTRICAL CHARACTERISTICS

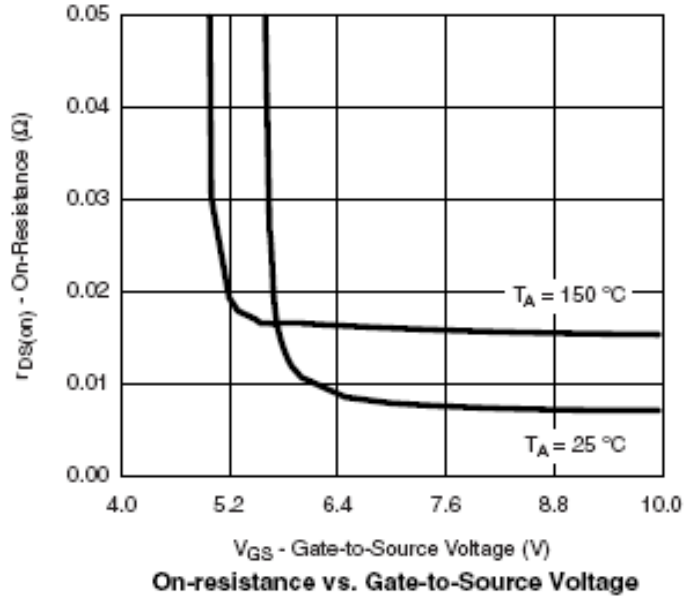
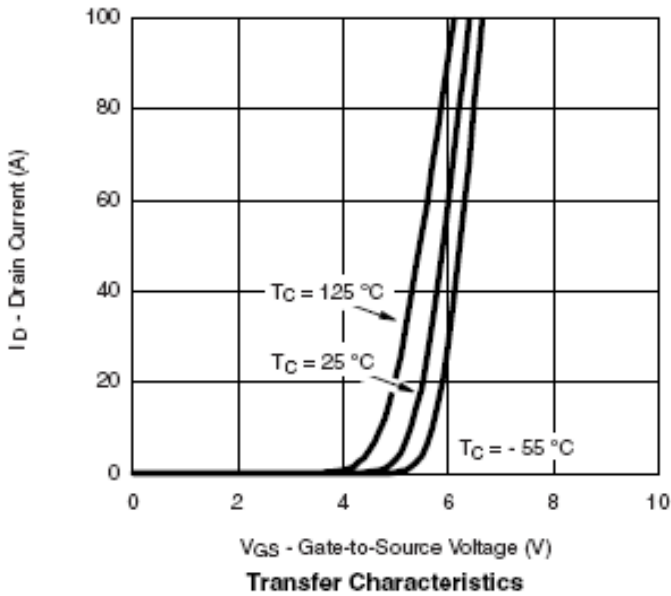
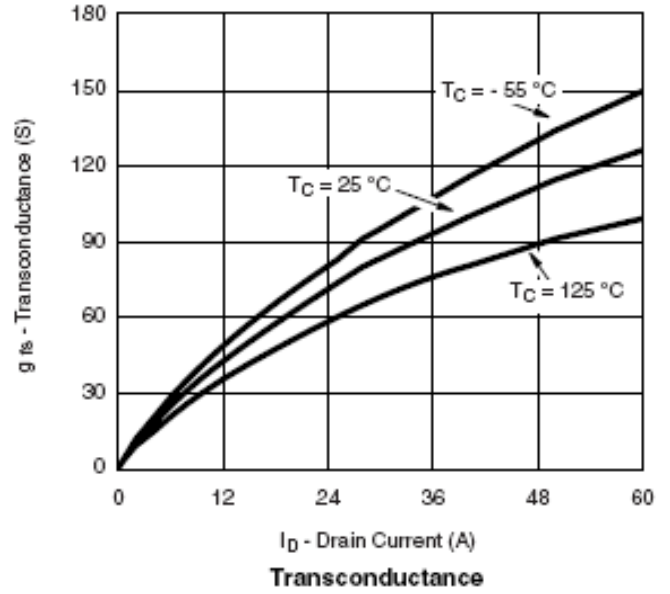
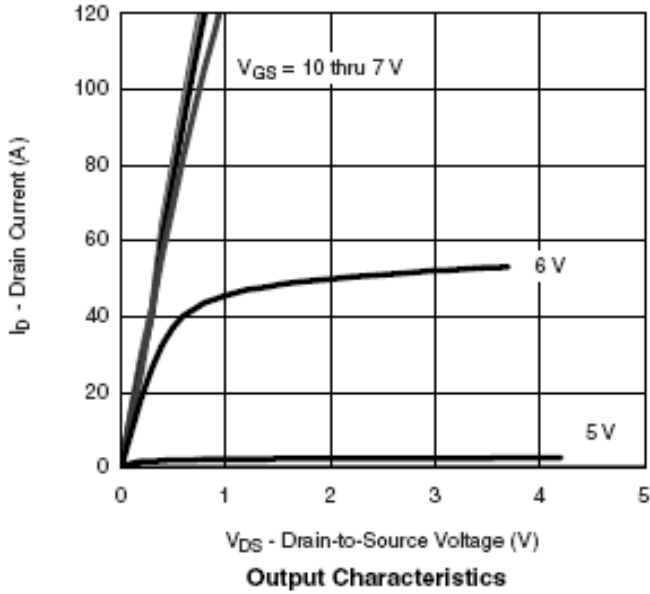
(TA=25°C Unless otherwise noted)

| Parameter | Symbol | Conditions | Min. | Typ | Max. | Unit |
|---------------------------------|---------------|--|------|-------|-----------|------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | 100 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1.0 | | 3.0 | |
| Gate Leakage Current | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 20V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=80V, V_{GS}=0V$ | | | 1 | uA |
| | | $V_{DS}=80V, V_{GS}=0V$ $T_J = 150^\circ C$ | | | 250 | |
| On-State Drain Current | $I_{D(on)}$ | $V_{DS} \geq 10V, V_{GS} = 10V$ | 70 | | | A |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS} = 10V, I_D=80A$ | | 7.5 | 8.5 | mΩ |
| | | $V_{GS} = 6.0V, I_D=30A$ | | 8.5 | 9.8 | |
| | | $V_{GS} = 4.5V, I_D=10A$ | | 8.2 | 10.0 | |
| Forward Transconductance | g_{fs} | $V_{DS}=15V, I_D=20A$ | | 62 | | S |
| Diode Forward Voltage | V_{SD} | $I_S=30A, V_{GS} = 0V$ | | | 1.5 | V |
| Dynamic | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=50V, V_{GS}=10V$ $I_D= 20A$ | | 230 | | nC |
| Gate-Source Charge | Q_{gs} | | | 80 | | |
| Gate-Drain Charge | Q_{gd} | | | 55 | | |
| Input Capacitance | C_{iss} | $V_{DS}=50V, V_{GS}=0V$ $f=1MHz$ | | 14200 | | pF |
| Output Capacitance | C_{oss} | | | 800 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 220 | | |
| Turn-On Time | $t_{d(on)}$ | $V_{DD}=50V, R_L=0.6\Omega$ $I_D=20A, V_{GEN}=10V$ $R_G=1.0\Omega$ | | 75 | | nS |
| | t_r | | | 40 | | |
| Turn-Off Time | $t_{d(off)}$ | | | 100 | | |
| | t_f | | | 25 | | |



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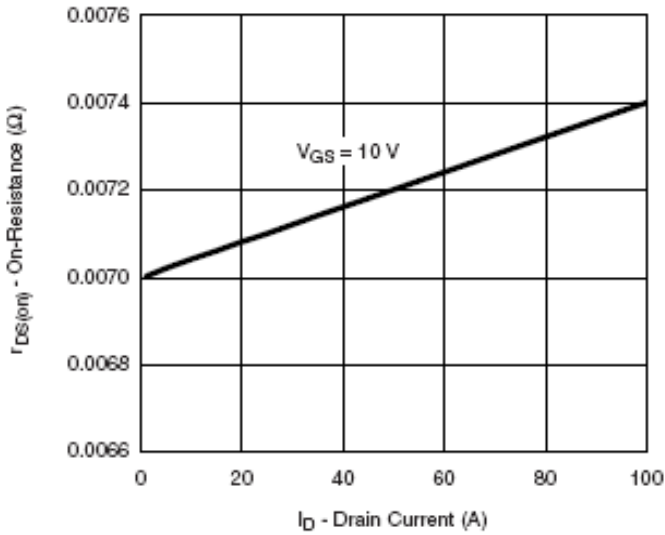
TYPICAL CHARACTERISTICS



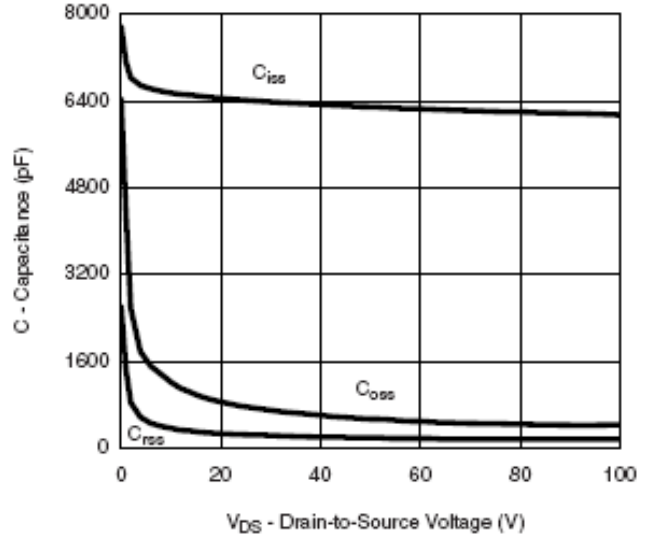


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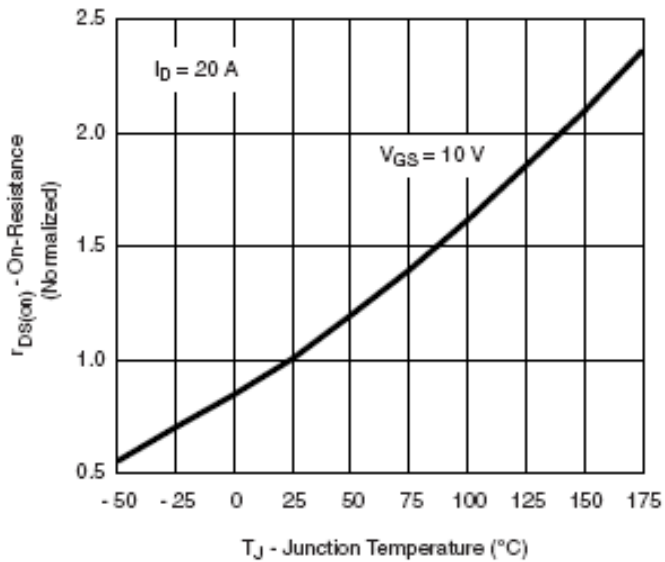
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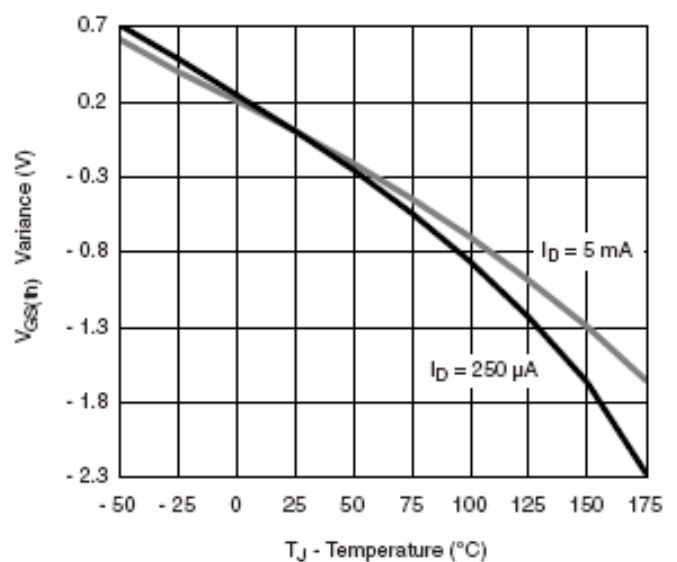
On-Resistance vs. Drain Current



Capacitance



On-Resistance vs. Junction Temperature

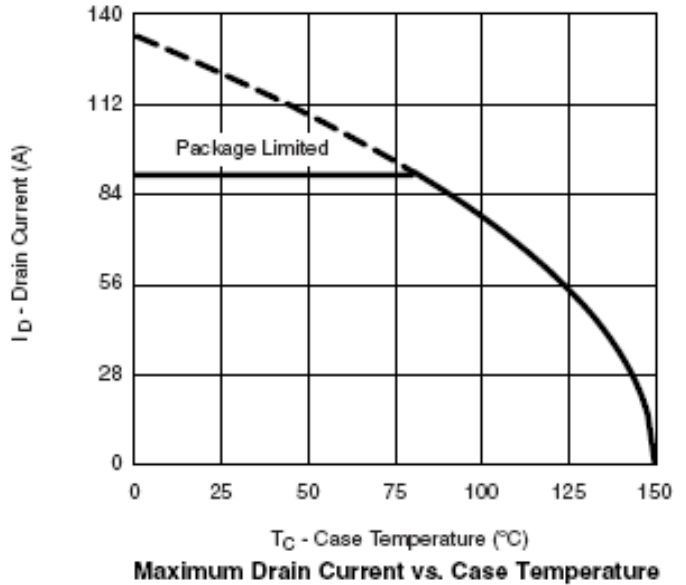
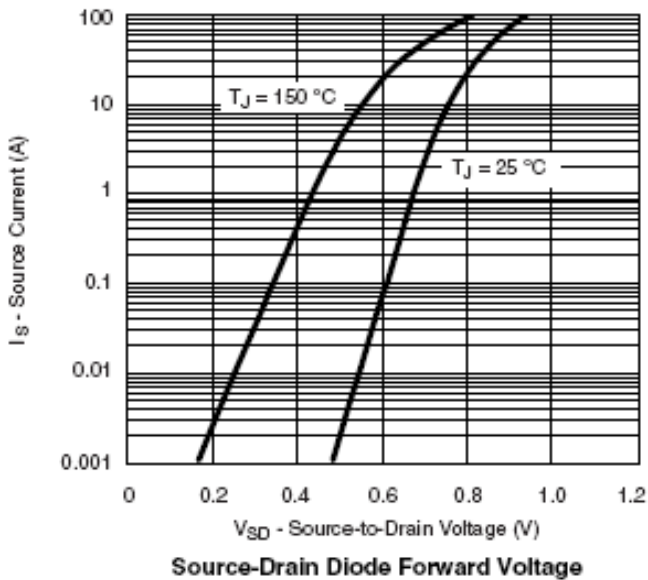
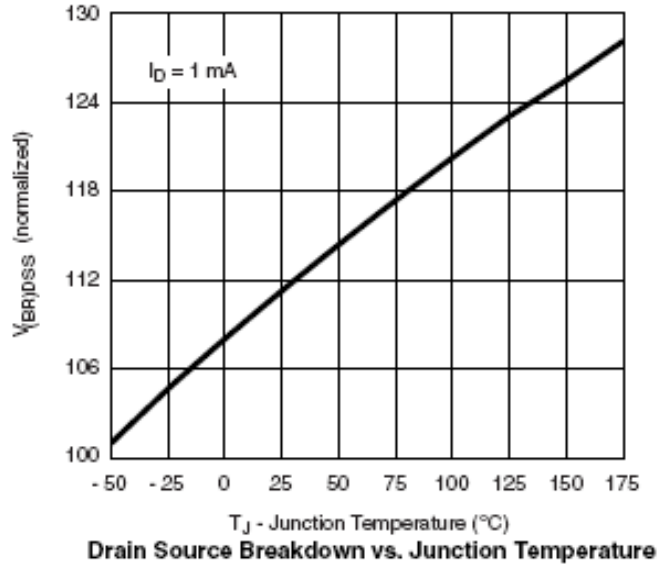
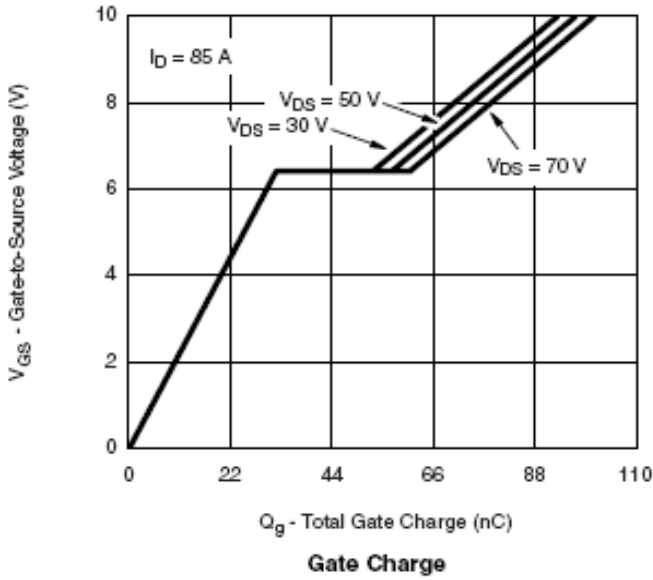


Threshold Voltage



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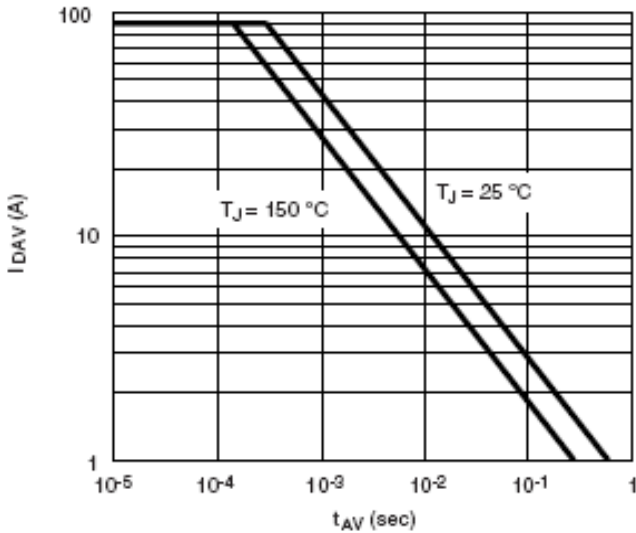
TYPICAL CHARACTERISTICS



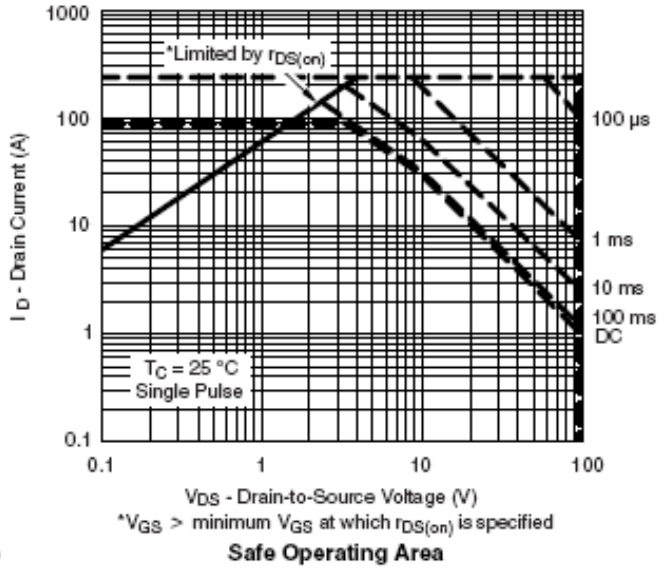


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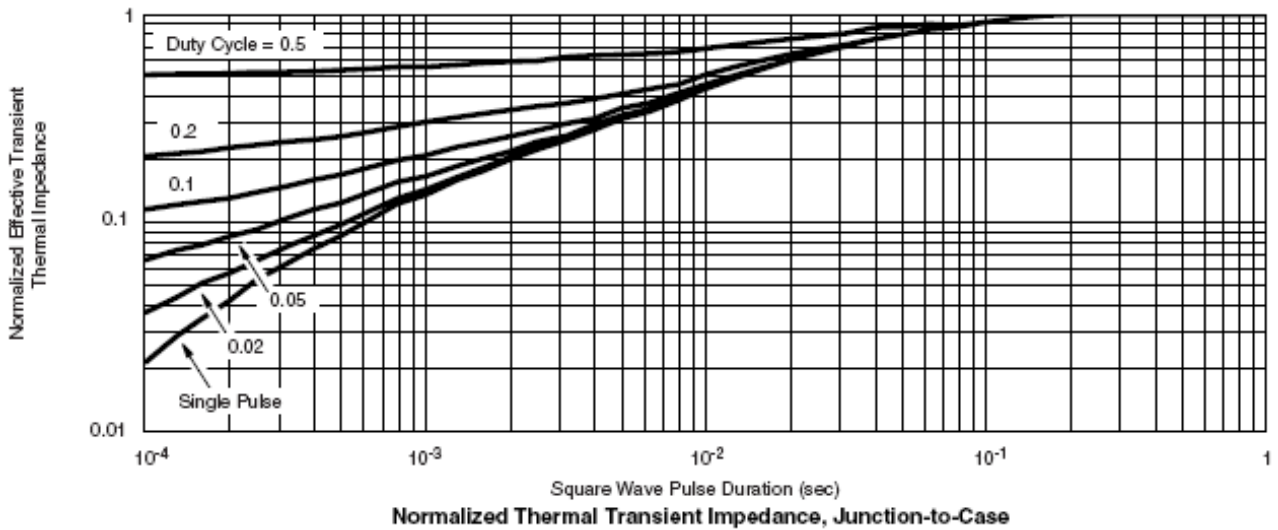
TYPICAL CHARACTERISTICS



Single Pulse Avalanche Current Capability vs. Time



Safe Operating Area

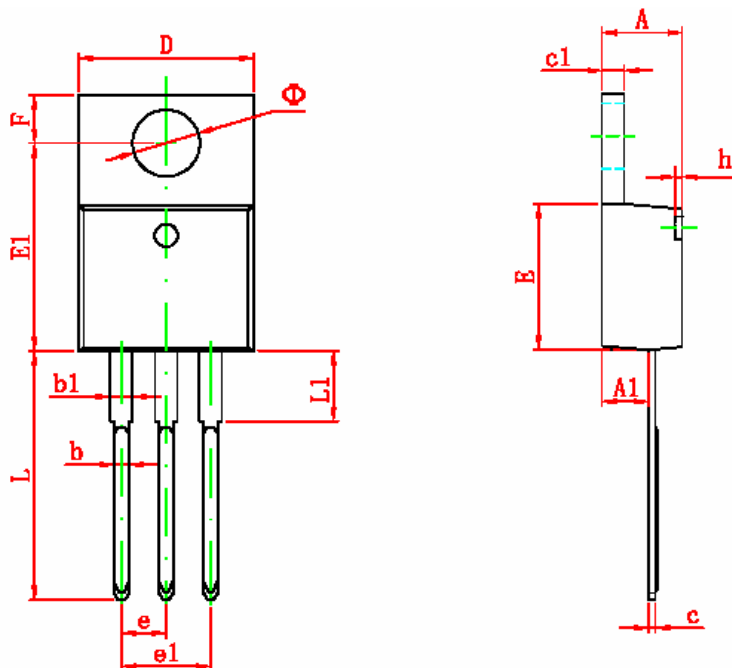


Normalized Thermal Transient Impedance, Junction-to-Case



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TO-220-3L PACKAGE OUTLINE



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|--------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 4.470 | 4.670 | 0.176 | 0.184 |
| A1 | 2.520 | 2.820 | 0.099 | 0.111 |
| b | 0.710 | 0.910 | 0.028 | 0.036 |
| b1 | 1.170 | 1.370 | 0.046 | 0.054 |
| c | 0.310 | 0.530 | 0.012 | 0.021 |
| c1 | 1.170 | 1.370 | 0.046 | 0.054 |
| D | 10.010 | 10.310 | 0.394 | 0.406 |
| E | 8.500 | 8.900 | 0.335 | 0.350 |
| E1 | 12.060 | 12.460 | 0.475 | 0.491 |
| e | 2.540 TYP | | 0.100 TYP | |
| e1 | 4.980 | 5.180 | 0.196 | 0.204 |
| F | 2.590 | 2.890 | 0.102 | 0.114 |
| h | 0.000 | 0.300 | 0.000 | 0.012 |
| L | 13.400 | 13.800 | 0.528 | 0.543 |
| L1 | 3.560 | 3.960 | 0.140 | 0.156 |
| • • | 3.735 | 3.935 | 0.147 | 0.155 |



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