SHANGHAI SINO-IC
MICROELECTRONICS CO., LTD.

SE60P20B

# P-Channel Enhancement-Mode MOSFET

Revision: A

## General Description

Thigh Density Cell Design For Ultra Low On-Resistance Fully Characterized Avalanche Voltage and Current Improved Shoot-Through FOM

- Simple Drive Requirement
- Small Package Outline
- Surface Mount Device

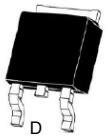
## Features

For a single MOSFET

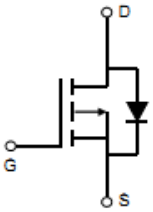
- $V_{DS}$ = -60V
- $R_{DS(ON)}$ = 26mΩ @ $V_{GS}$=-10V

## Pin configurations

See Diagram below




TO-252




## Absolute Maximum Ratings

| Parameter | | Symbol | Rating | Units |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | -60 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Drain Current | Continuous | $I_D$ | -20 | A |
| | Pulsed | | -80 | |
| Total Power Dissipation | @TA=25℃ | $P_D$ | 170 | W |
| Operating Junction Temperature Range | | $T_J$ | -55 to 150 | ℃ |

| Electrical Characteristics (TJ=25℃ unless otherwise noted) | | | | | | |
|---|---|---|---|---|---|---|
| **Symbol** | **Parameter** | **Test Conditions** | **Min** | **Typ** | **Max** | **Units** |
| **OFF CHARACTERISTICS (Note 2)** | | | | | | |
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $I_D$=-250μA, $V_{GS}$=0V | -60 | | | V |
| $I_{DSS}$ | Drain to Source Leakage Current | $V_{DS}$=-60V, $V_{GS}$=0V | | | 1 | μA |
| $I_{GSS}$ | Gate-Body Leakage Current | $V_{GS}$=20V | | | 100 | nA |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$=$V_{GS}$, $I_D$=250μA | -1 | | -2.5 | V |
| $R_{DS(ON)}$ | Static Drain-Source On-Resistance [2] | $V_{GS}$=-10V, $I_D$=-10A | - | 26 | 33 | mΩ |
| $g_{FS}$ | Forward Transconductance | $V_{DS}$=-25V, $I_D$=-10A | 19 | | | S |
| **DYNAMIC PARAMETERS** | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{GS}$=0V, $V_{DS}$=-25V, f=1MHz | | 3500 | | pF |
| $C_{oss}$ | Output Capacitance | | | 1250 | | pF |
| $C_{rss}$ | Reverse Transfer Capacitance | | | 450 | | pF |
| **SWITCHING PARAMETERS** | | | | | | |
| $Q_g$ | Total Gate Charge [2] | $V_{GS}$=-10V, $V_{DS}$=-30V, $I_D$=-42A | | 120 | 180 | nC |
| $Q_{gs}$ | Gate Source Charge | | | 32 | | nC |
| $Q_{gd}$ | Gate Drain Charge | | | 53 | | nC |
| $t_{d(on)}$ | Turn-On Delay Time | $V_{GS}$=-10V, $V_{DS}$=-30V, $R_{GEN}$=2.6Ω $I_D$=-42A | | 20 | | ns |
| $t_{d(off)}$ | Turn-Off Delay Time | | | 51 | | ns |
| $t_{d(r)}$ | Turn-On Rise Time | | | 99 | | ns |
| $t_{d(f)}$ | Turn-Off Fall Time | | | 64 | | ns |

**Thermal Resistance**

| **Symbol** | **Parameter** | **Typ** | **Max** | **Units** |
|---|---|---|---|---|
| $R_{\theta JC}$ | Junction to Case | - | 3.6 | ℃/W |

## Typical Characteristics

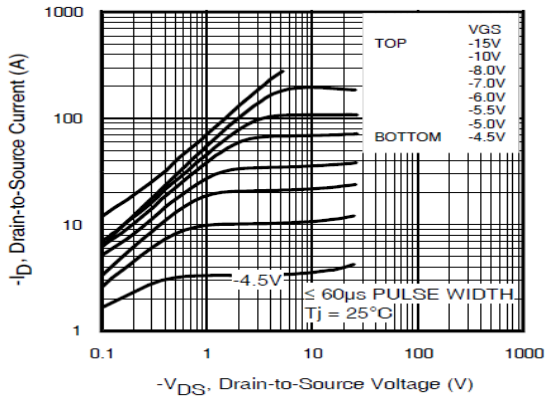



**Fig 1.** Typical Output Characteristics

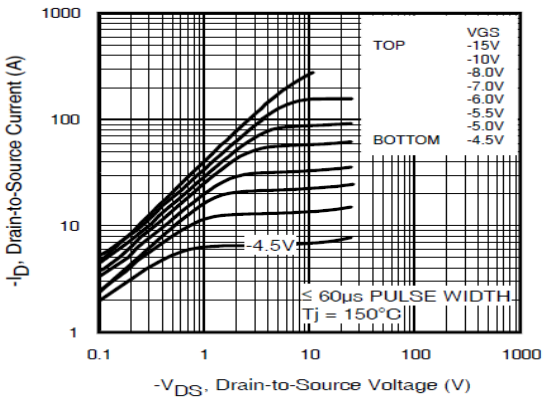



**Fig 2.** Typical Output Characteristics

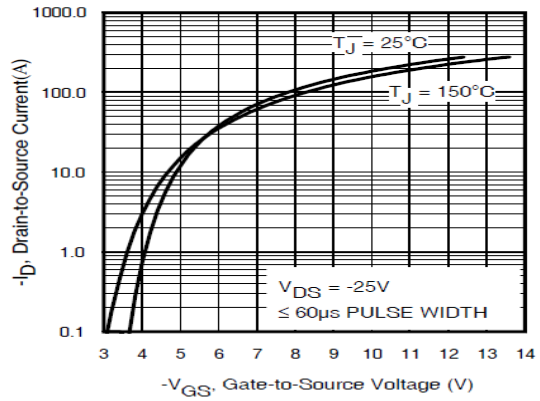



**Fig 3.** Typical Transfer Characteristics

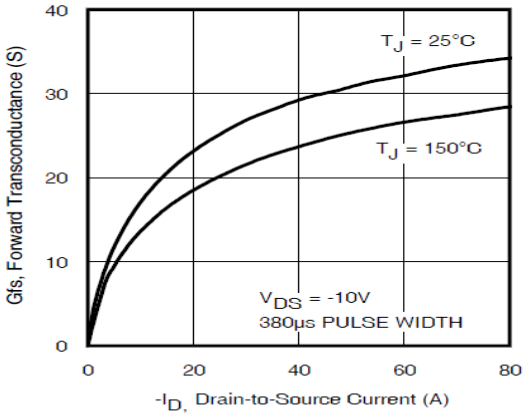



**Fig 4.** Typical Forward Transconductance Vs. Drain Current

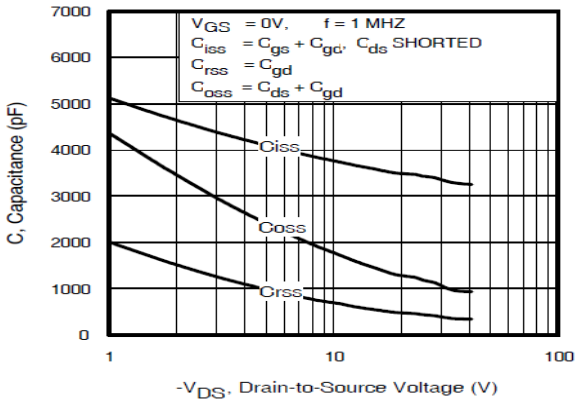



**Fig 5.** Typical Capacitance Vs. Drain-to-Source Voltage

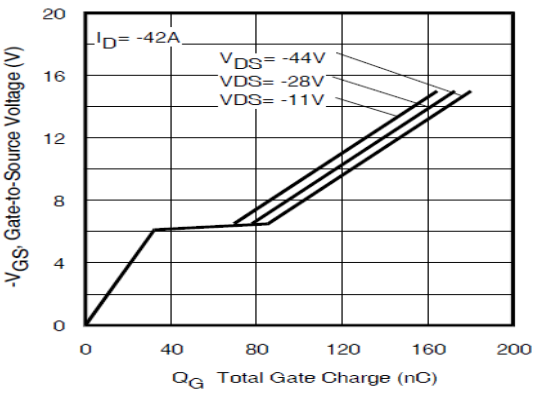



**Fig 6.** Typical Gate Charge Vs. Gate-to-Source Voltage

## Typical Characteristics

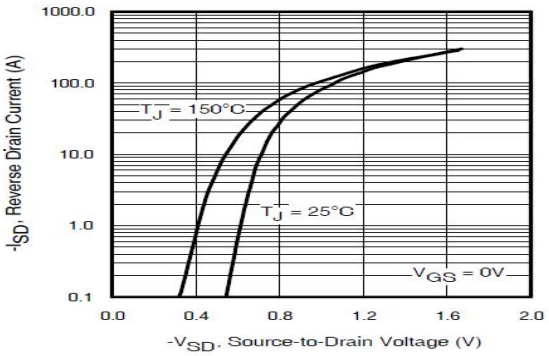



**Fig 7.** Typical Source-Drain Diode Forward Voltage

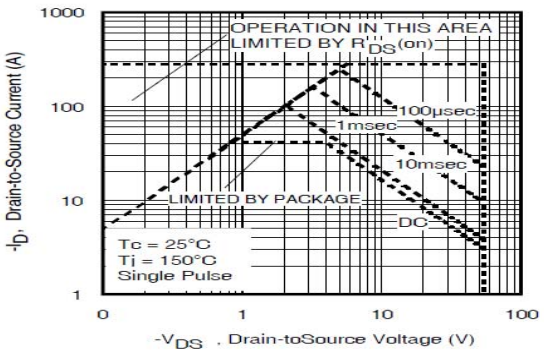



**Fig 8.** Maximum Safe Operating Area

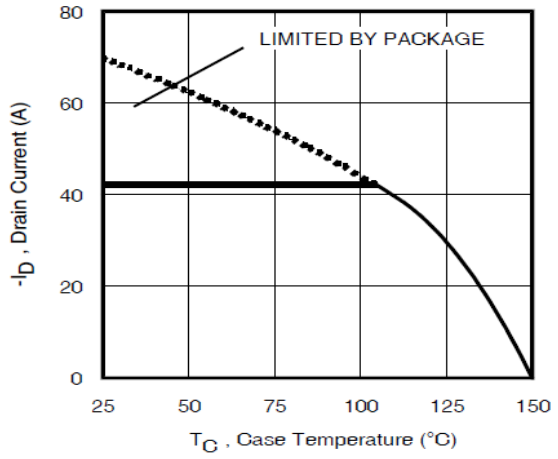



**Fig 9.** Maximum Drain Current Vs. Case Temperature

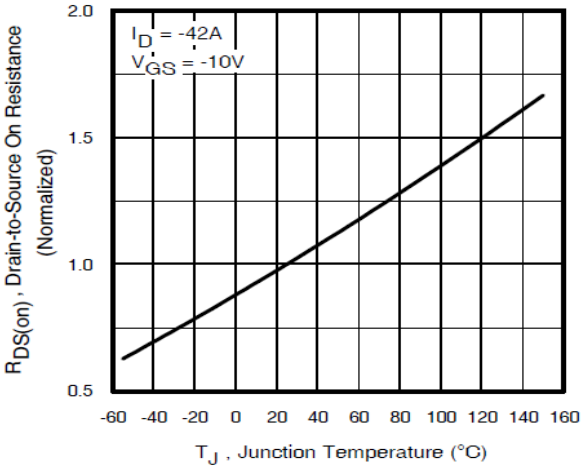



**Fig 10.** Normalized On-Resistance Vs. Temperature

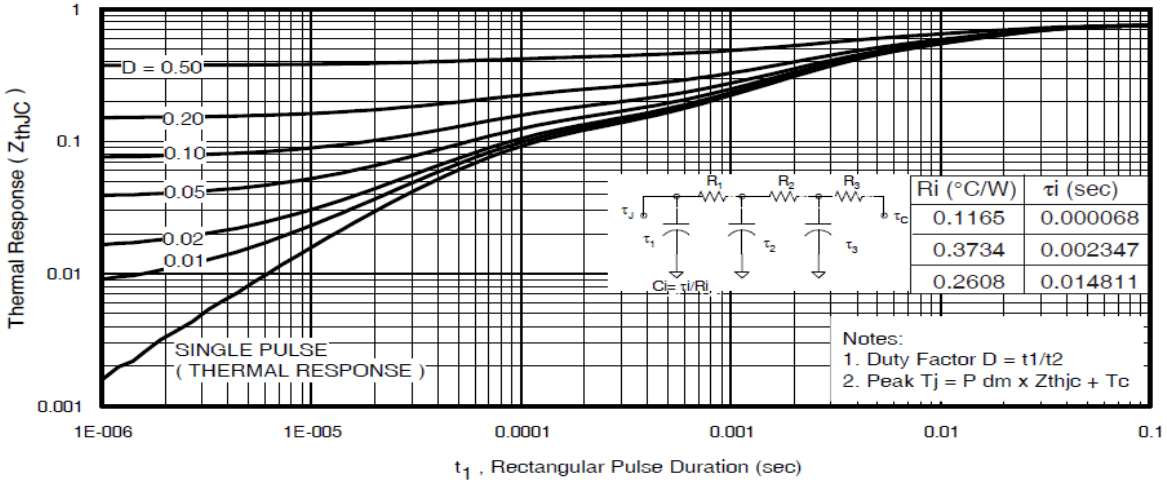
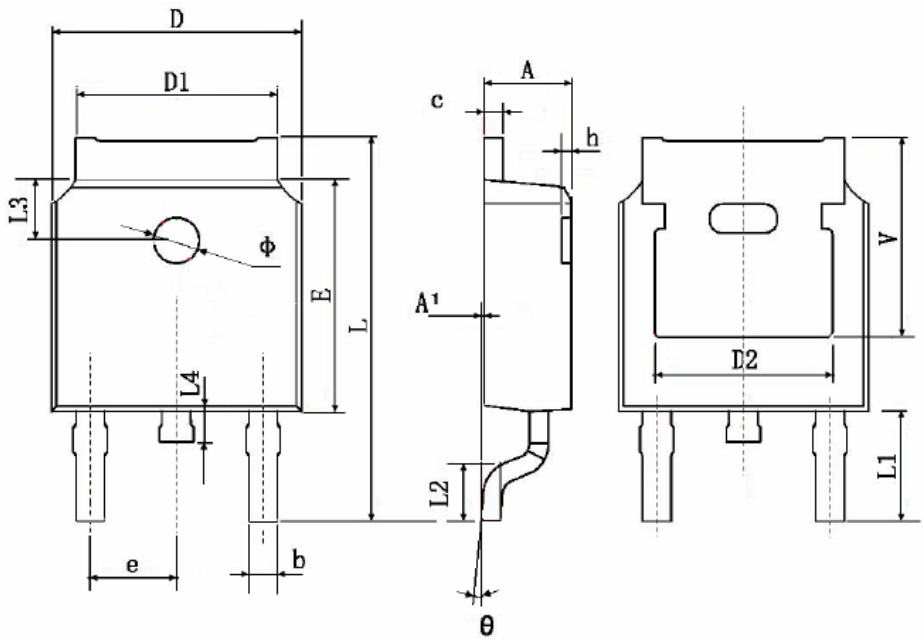



**Fig 11.** Maximum Effective Transient Thermal Impedance, Junction-to-Case

## Package Outline Dimension

**TO-252**




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 2.200 | 2.400 | 0.087 | 0.094 |
| A1 | 0.000 | 0.127 | 0.000 | 0.005 |
| b | 0.660 | 0.860 | 0.026 | 0.034 |
| c | 0.460 | 0.580 | 0.018 | 0.023 |
| D | 6.500 | 6.700 | 0.256 | 0.264 |
| D1 | 5.100 | 5.460 | 0.201 | 0.215 |
| D2 | 4.830 TYP. | | 0.190 TYP. | |
| E | 6.000 | 6.200 | 0.236 | 0.244 |
| e | 2.186 | 2.386 | 0.086 | 0.094 |
| L | 9.800 | 10.400 | 0.386 | 0.409 |
| L1 | 2.900 TYP. | | 0.114 TYP. | |
| L2 | 1.400 | 1.700 | 0.055 | 0.067 |
| L3 | 1.600 TYP. | | 0.063 TYP. | |
| L4 | 0.600 | 1.000 | 0.024 | 0.039 |
| Φ | 1.100 | 1.300 | 0.043 | 0.051 |
| θ | 0° | 8° | 0° | 8° |
| h | 0.000 | 0.300 | 0.000 | 0.012 |
| V | 5.350 TYP. | | 0.211 TYP. | |

**SHANGHAI SINO-IC MICROELECTRONICS CO., LTD**

**Add:** Building 3, Room 3401-03, No.200 Zhangheng Road, ZhangJiang Hi-Tech Park, Pudong, Shanghai 201203, China
**Phone:** +86-21-33932402 33932403 33932405 33933508 33933608
**Fax:** +86-21-33932401
**Email:** webmaster@sino-ic.net
**Website:** http://www.sino-ic.net

# X-ON Electronics

Largest Supplier of Electrical and Electronic Components

***Click to view similar products for*** MOSFET ***category:***

***Click to view products by*** SINO-IC ***manufacturer:***

Other Similar products are found below :

614233C 648584F MCH3443-TL-E MCH6422-TL-E FDPF9N50NZ FW216A-TL-2W FW231A-TL-E APT5010JVR NTNS3A92PZT5G IRF100S201 JANTX2N5237 2SK2464-TL-E 2SK3818-DL-E FCA20N60_F109 FDZ595PZ STD6600NT4G FSS804-TL-E 2SJ277-DL-E 2SK1691-DL-E 2SK2545(Q,T) D2294UK 405094E 423220D MCH6646-TL-E TPCC8103,L1Q(CM 367-8430-0972-503 VN1206L 424134F 026935X 051075F SBVS138LT1G 614234A 715780A NTNS3166NZT5G 751625C 873612G IRF7380TRHR IPS70R2K0CEAKMA1 RJK60S3DPP-E0#T2 RJK60S5DPK-M0#T0 APT5010JVFR APT12031JFLL APT12040JVR DMN3404LQ-7 NTE6400 JANTX2N6796U JANTX2N6784U JANTXV2N5416U4 SQM110N05-06L-GE3 SIHF35N60E-GE3