

**Main Product Characteristics:**

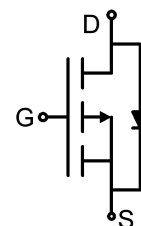
$V_{DSS}$	-60V
$R_{DS(on)}$	23m $\Omega$
$I_D$	-26A



TO-252 (DPAK)



Marking and Pin Assignments



Schematic Diagram

**Main Features**

- Advanced MOSFET process technology
- Special design for PWM, load switching etc
- Ultra-low R<sub>ds(on)</sub> together with low gate charge
- Fast switch and body-diode trr
- 150°C operating temperature


**Description**

It utilizes the optimized chip design to balance the high density and the low on-resistance with high repetitive avalanche performance improvement. Based on its excellent efficiency and reliability, the product could be used in power invert, rectifying, energy storage and other application area.

**Absolute Max Rating**

Symbol	Parameter	Max.	Units
$I_D @ T_C = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}^{\text{①}}$	-26	A
$I_{DM}$	Pulsed Drain Current <sup>②</sup>	-60	
$P_D @ T_C = 25^\circ\text{C}$	Power Dissipation <sup>③</sup>	60	W
$V_{DS}$	Drain-Source Voltage	-60	V
$V_{GS}$	Gate-to-Source Voltage	$\pm 20$	V
$E_{AS}$	Single Pulse Avalanche Energy @ L=0.5mH	125	mJ
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

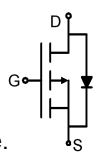
**Thermal Resistance**

Symbol	Characteristics	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case <sup>③</sup>	—	2.0	$^\circ\text{C}/\text{W}$

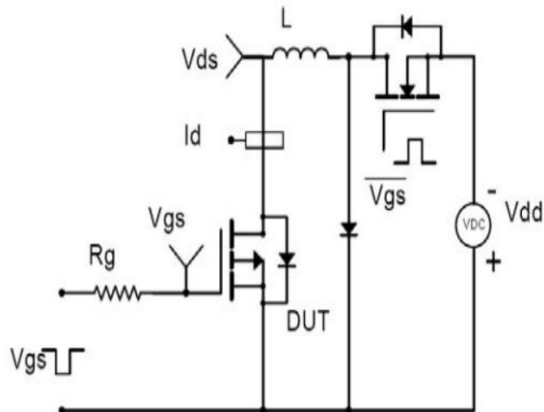
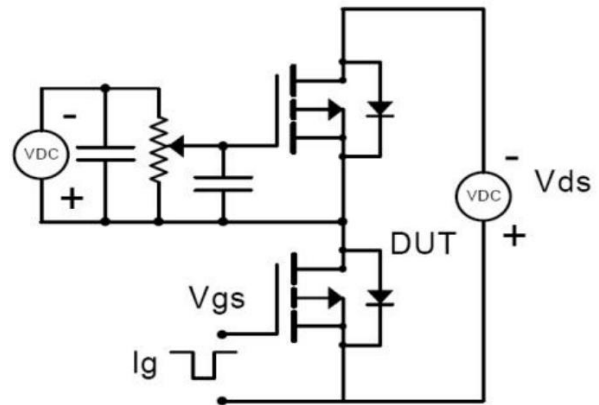
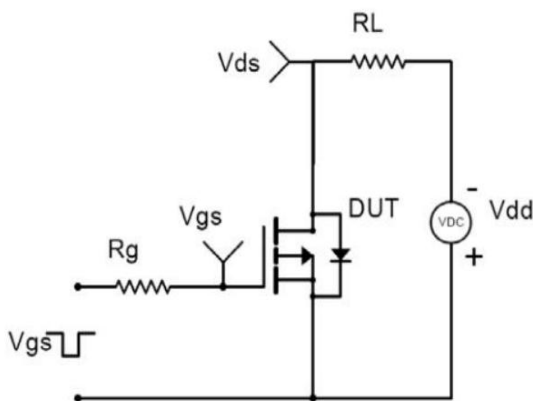
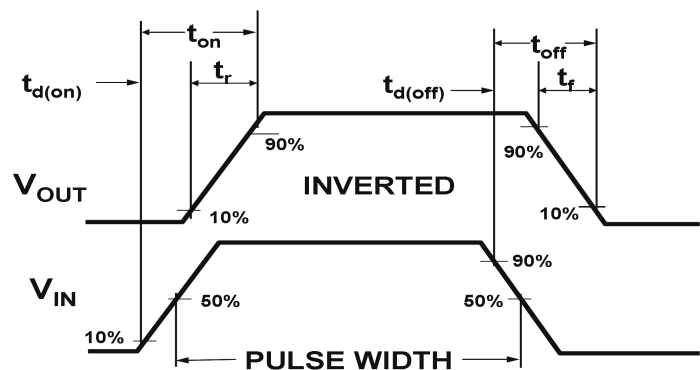
**Electrical Characteristics @ $T_A=25^{\circ}\text{C}$  unless otherwise specified**

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	-60	—	—	V	$V_{GS} = 0V, I_D = -250\mu A$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	23	30	m $\Omega$	$V_{GS}=-10V, I_D=-18A$
		—	29	40		$V_{GS}=-4.5V, I_D=-10A$
$V_{GS(th)}$	Gate threshold voltage	-1	—	-2.5	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
$I_{DSS}$	Drain-to-Source leakage current	—	—	-1	$\mu A$	$V_{DS} = -60V, V_{GS} = 0V$
$I_{GSS}$	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS} = 20V$
		—	—	-100		$V_{GS} = -20V$
$Q_g$	Total gate charge	—	48	—	nC	$V_{DS}=-30V$
$Q_{gs}$	Gate-to-Source charge	—	11	—		$I_D=-20A$
$Q_{gd}$	Gate-to-Drain("Miller") charge	—	10	—		$V_{GS}=-10V$
$t_{d(on)}$	Turn-on delay time	—	27	—	ns	$V_{DS}=-30V$
$t_r$	Rise time	—	31	—		$V_{GS}=-10V$
$t_{d(off)}$	Turn-Off delay time	—	60	—		$R_{GEN}=3\Omega$
$t_f$	Fall time	—	33	—		$I_D=-1A$
$C_{iss}$	Input capacitance	—	3010	—	pF	$V_{GS} = 0V$
$C_{oss}$	Output capacitance	—	150	—		$V_{DS} = -30V$
$C_{rss}$	Reverse transfer capacitance	—	128	—		$f = 1MHz$

**Source-Drain Ratings and Characteristics**

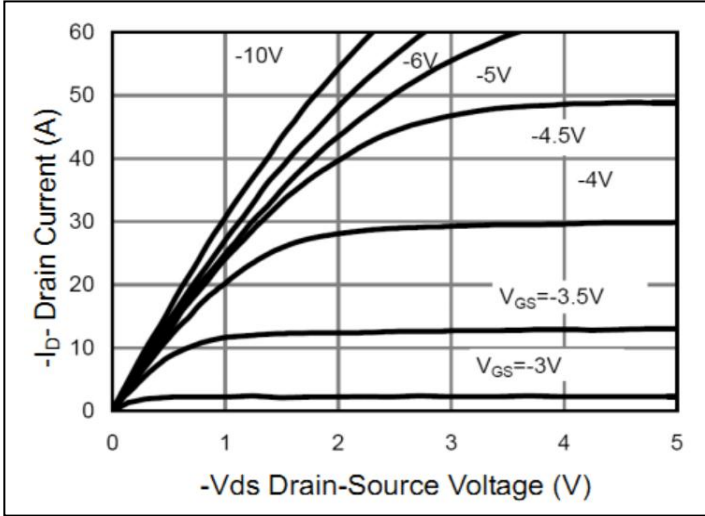
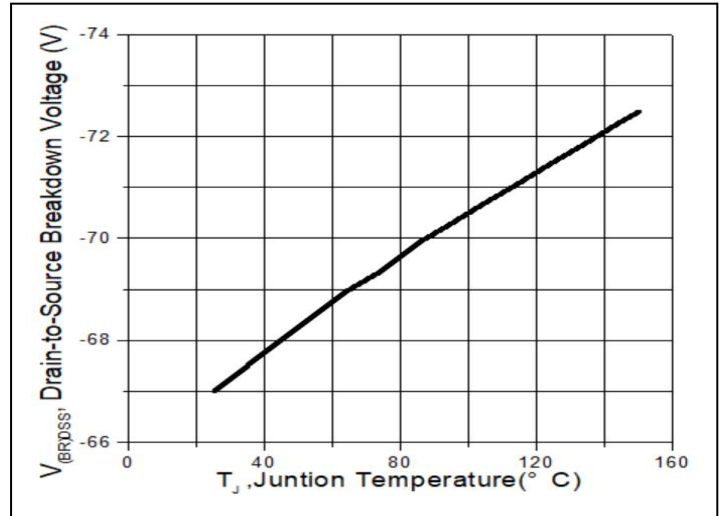
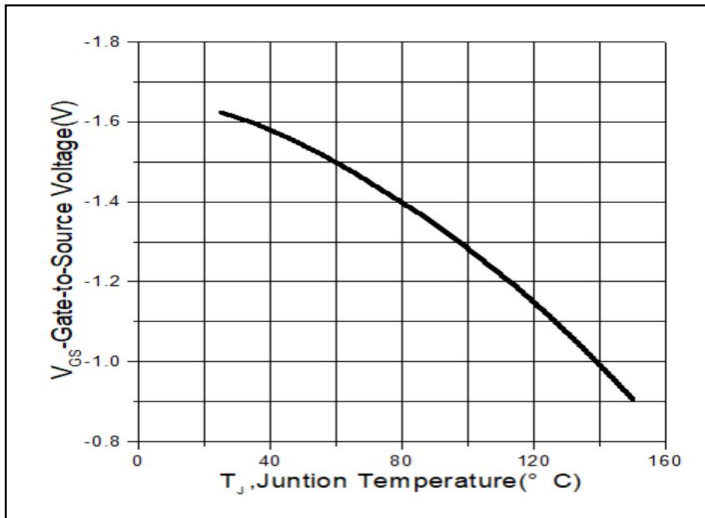
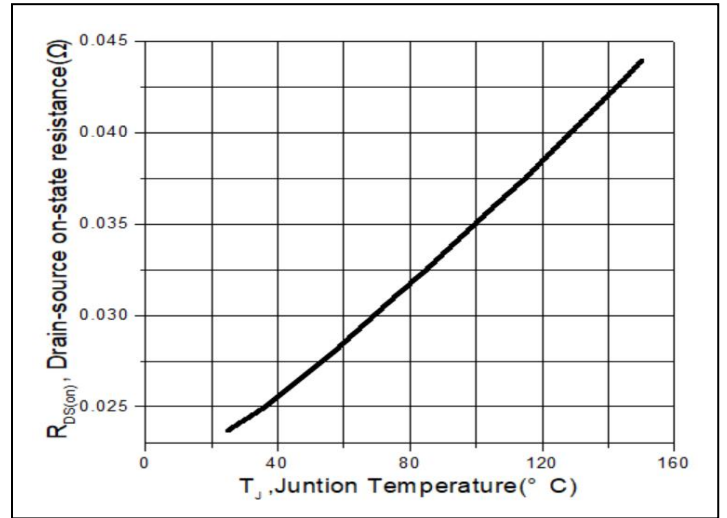
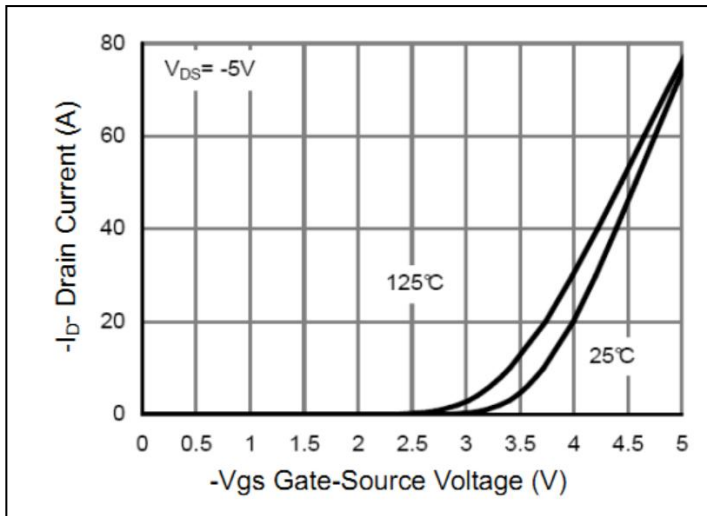
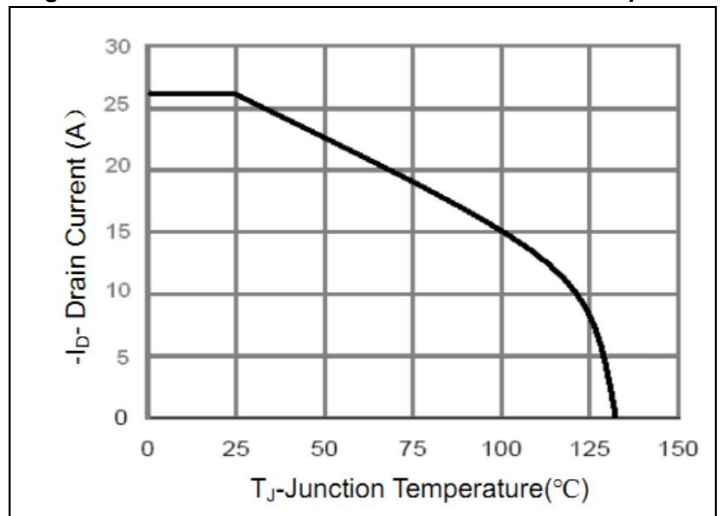
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$I_S$	Continuous Source Current (Body Diode)	—	—	-26	A	MOSFET symbol showing the integral reverse p-n junction diode. 
$I_{SM}$	Pulsed Source Current (Body Diode)	—	—	-60	A	
$V_{SD}$	Diode Forward Voltage	—	—	-1.2	V	$I_S=-1A, V_{GS}=0V$
$t_{rr}$	Reverse Recovery Time	—	40	—	ns	$I_S=-20A, di/dt=100A/\mu s$
$Q_{rr}$	Reverse Recovery Charge	—	56	—	nC	

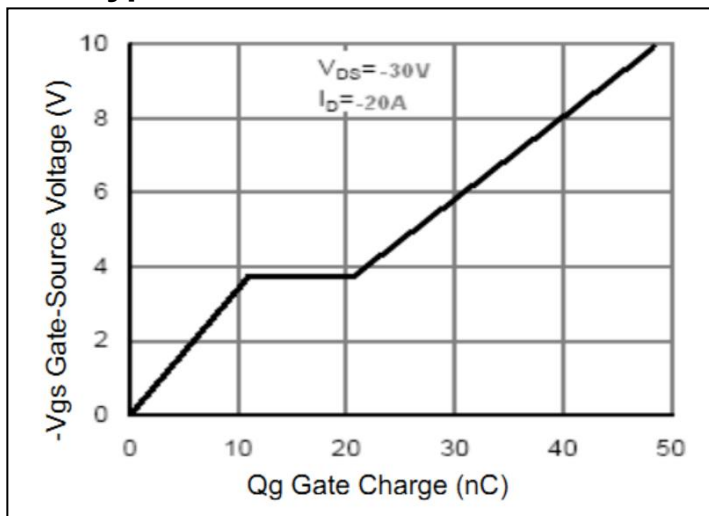
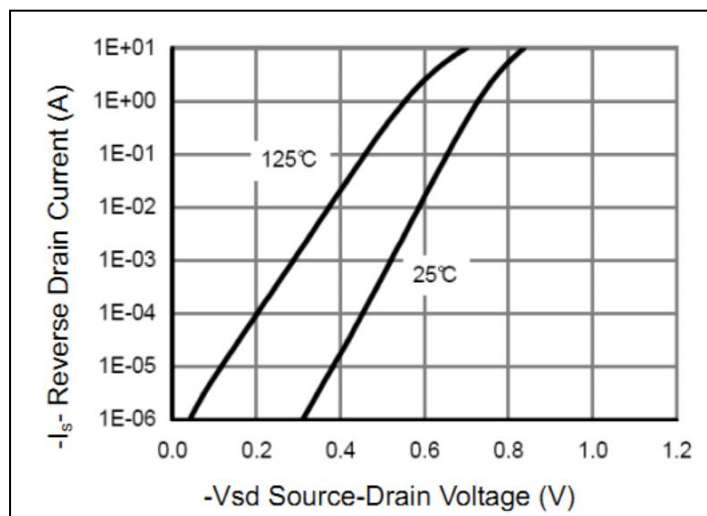
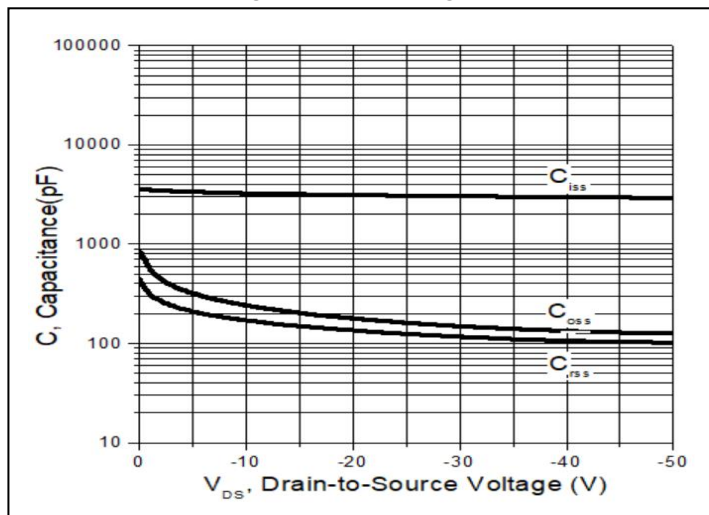
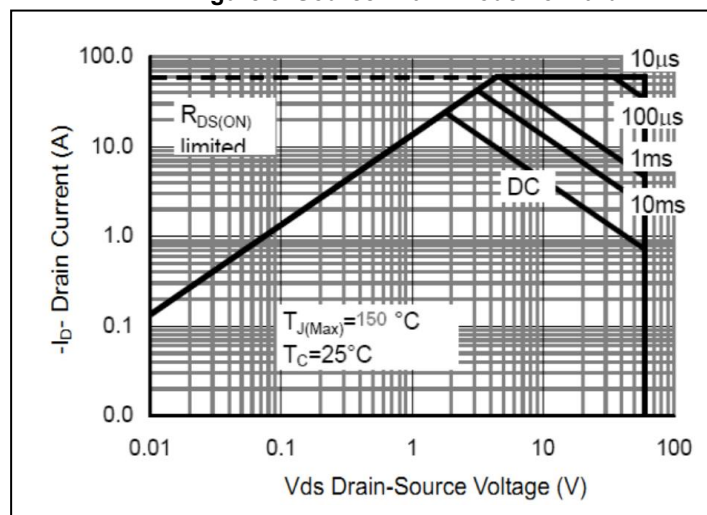
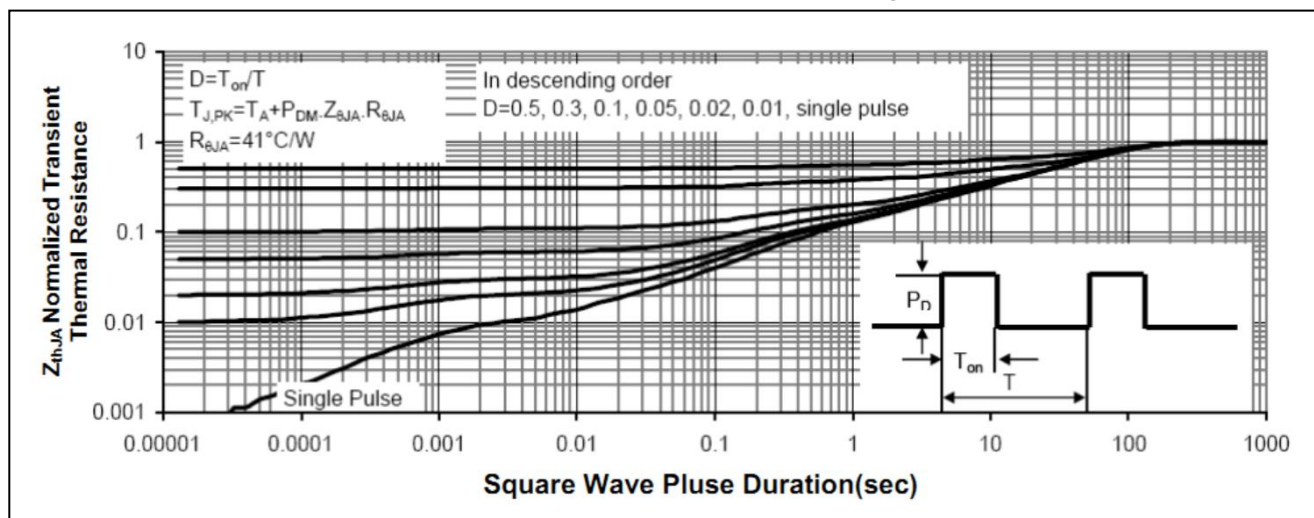
## Test Circuits and Waveforms

**EAS Test Circuit:**

**Gate Charge Test Circuit:**

**Switching Time Test Circuit:**

**Switching Waveforms:**


### Notes:

- ① Calculated continuous current based on maximum allowable junction temperature.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

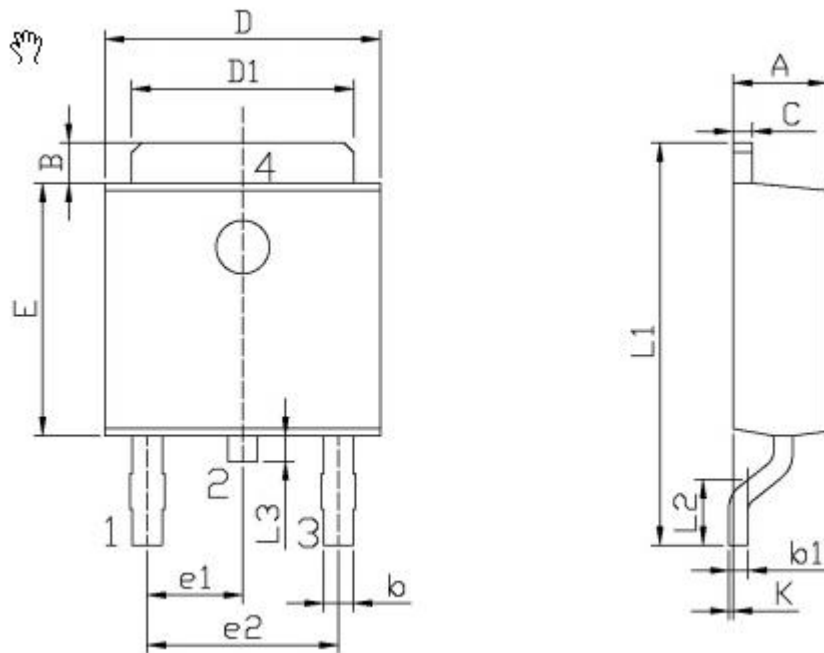
**Typical Electrical and Thermal Characteristics**

**Figure1. Typical Output Characteristics**

**Figure2. Drain-to-Source Breakdown Voltage vs. Junction Temperature**

**Figure 3. Normalized  $V_{GS(th)}$  vs. Junction Temperature**

**Figure 4. Normalized On-Resistance vs. Junction Temperature**

**Figure 5. Transfer Characteristics**

**Figure 6. Drain Current**

**Typical Electrical and Thermal Characteristics**

**Figure 7. Gate Charge**

**Figure 8. Source-Drain Diode Forward**

**Figure 9. Capacitance Characteristics**

**Figure 10. Safe Operation Area**

**Figure 11. Transient Thermal Impedance**

**Mechanical Data:**

TO-252 Package Outline (Unit : mm)

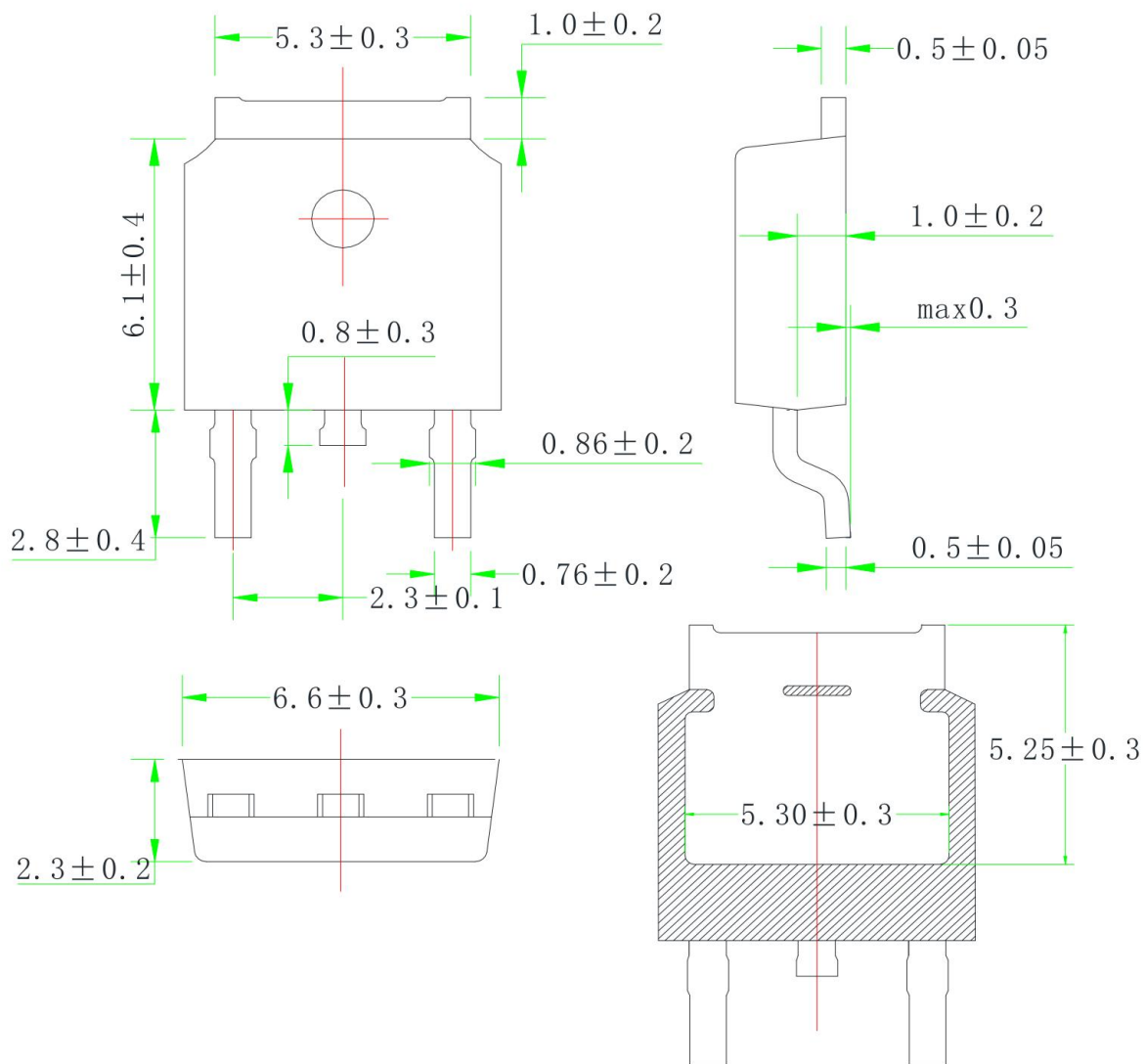
Option 1.



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单位: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.50	0.90	e2	4.43	4.73
b1	0.45	0.55	L1	9.45	9.95
C	0.45	0.55	L2	1.25	1.75
D	6.45	6.75	L3	0.60	0.90
D1	5.10	5.50	K	0.00	0.10

**Option 2 .**


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