

Main Product Characteristics:

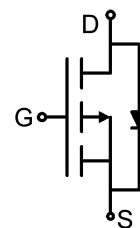
V_{DSS}	-60V
$R_{DS(on)}$	23m Ω
I_D	-26A



TO-252 (DPAK)



Marking and Pin Assignments



Schematic Diagram

Main Features

- Advanced MOSFET process technology
- Special design for PWM, load switching etc
- Ultra-low Rds on 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 ^②	-60	
$P_D @ T_C = 25^\circ\text{C}$	Power Dissipation ^③	60	W
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-to-Source Voltage	± 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	$^\circ\text{C}$

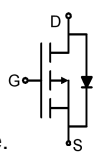
Thermal Resistance

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

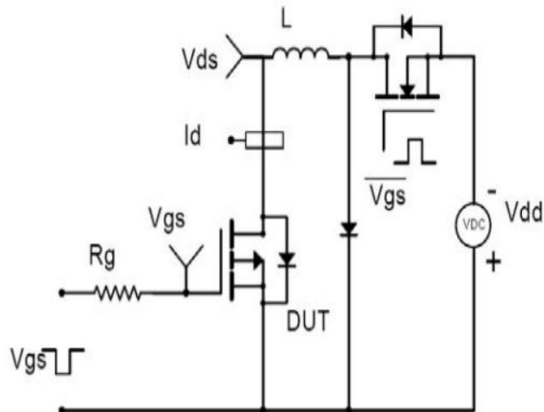
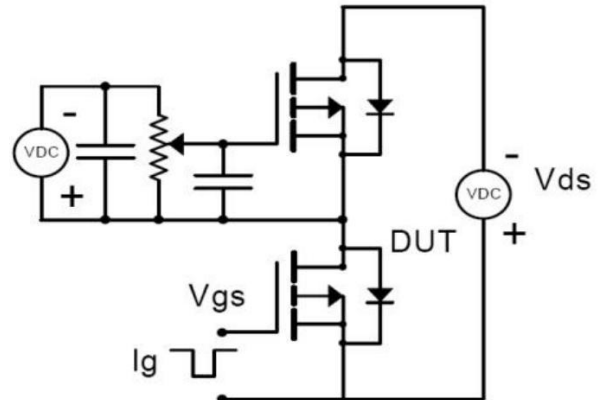
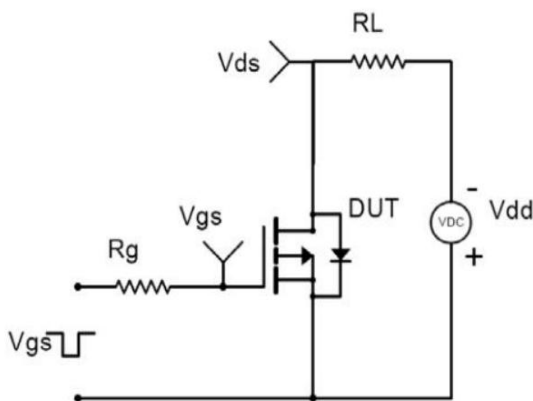
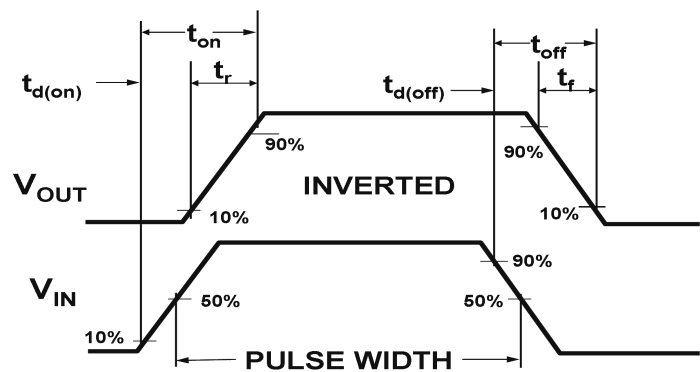
Electrical Characteristics @ $T_A=25^{\circ}\text{C}$ unless otherwise specified

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 Ω	$V_{GS}=-10V, I_D=-18A$
		—	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	μA	$V_{DS} = -60V, V_{GS} = 0V$
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

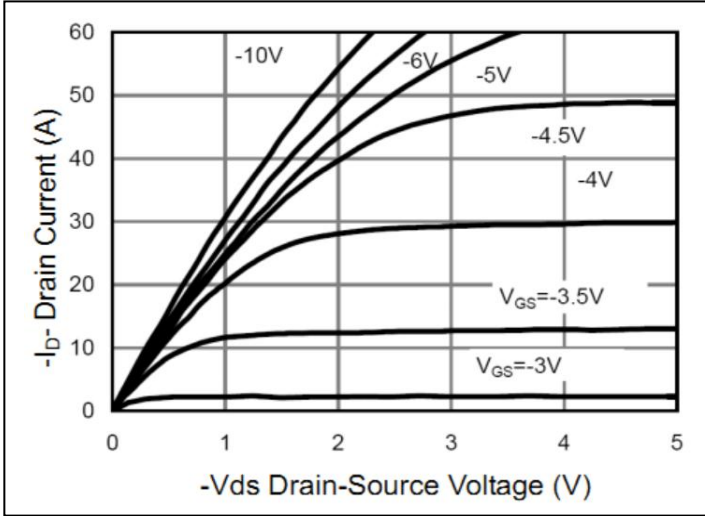
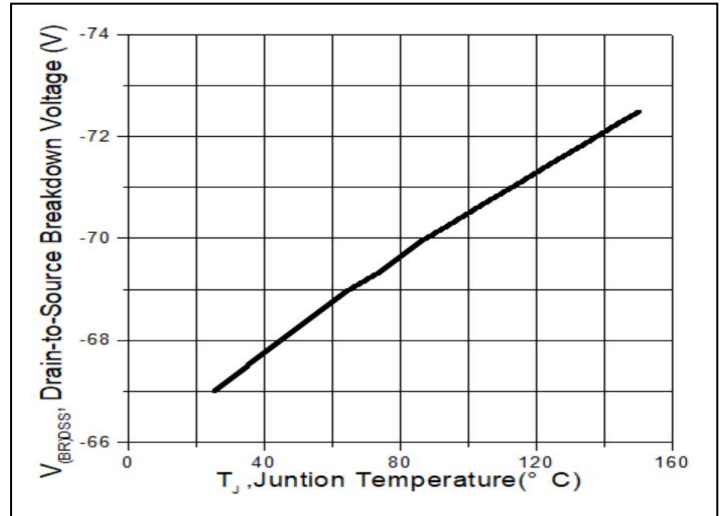
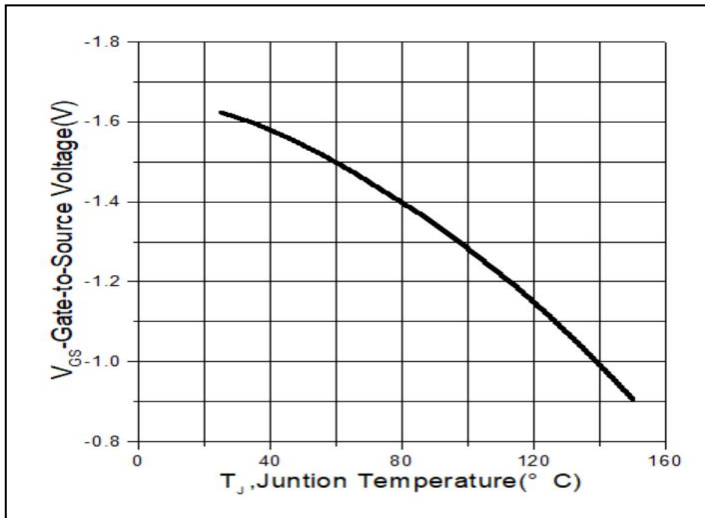
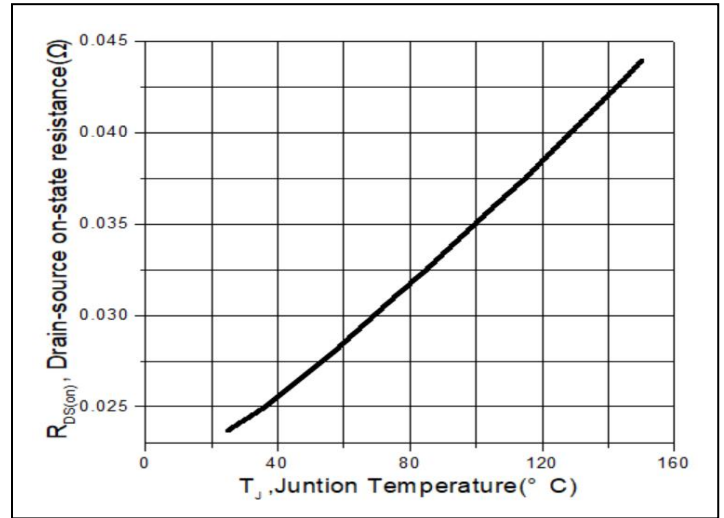
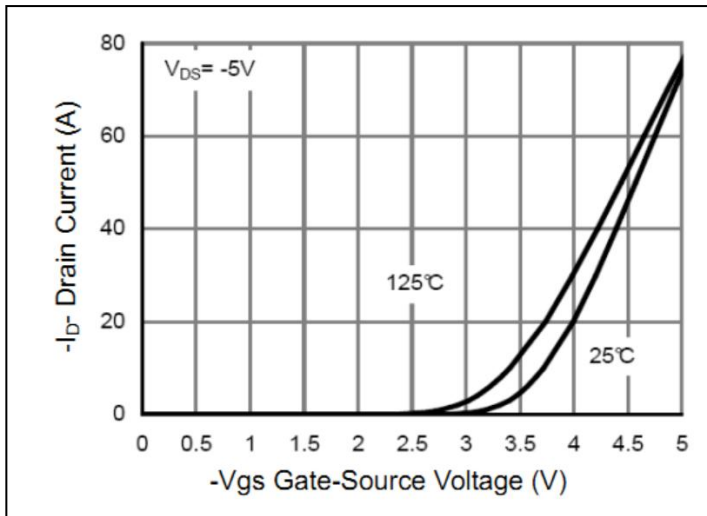
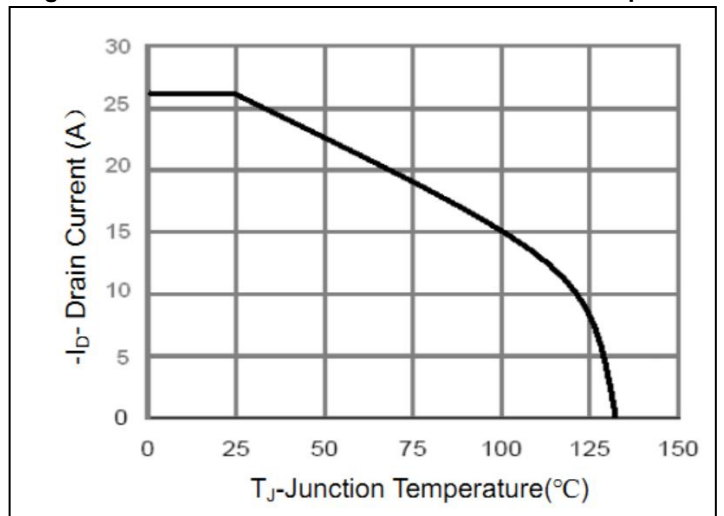
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-26	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	-60	A	
V_{SD}	Diode Forward Voltage	—	—	-1.2	V	$I_S=-1A, V_{GS}=0V$
t_{rr}	Reverse Recovery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

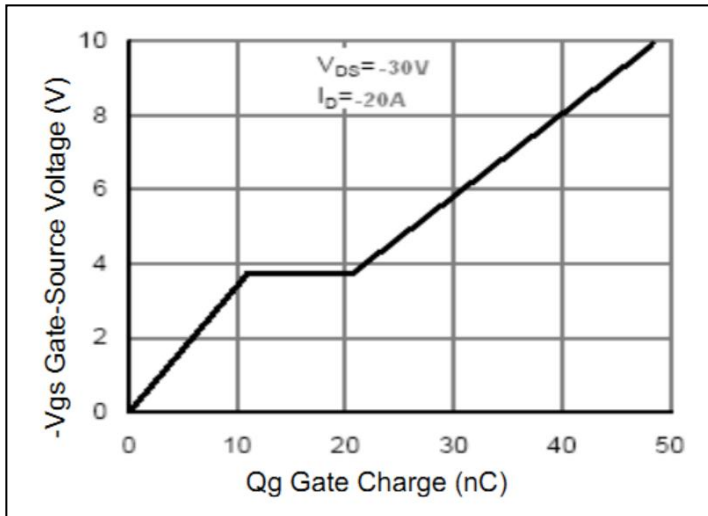
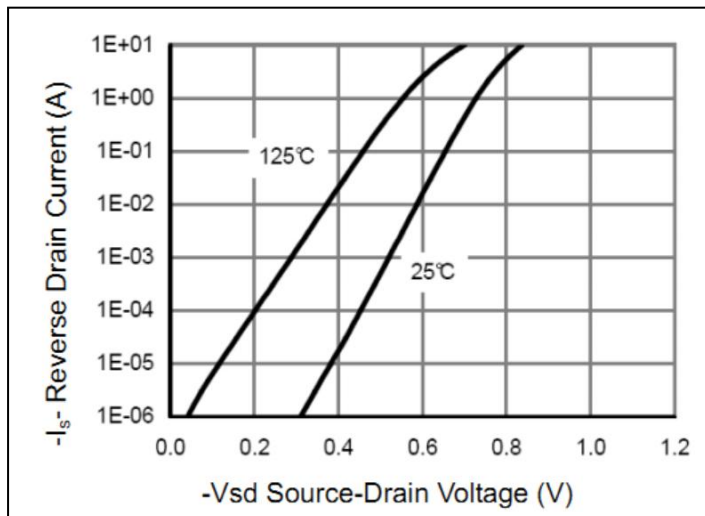
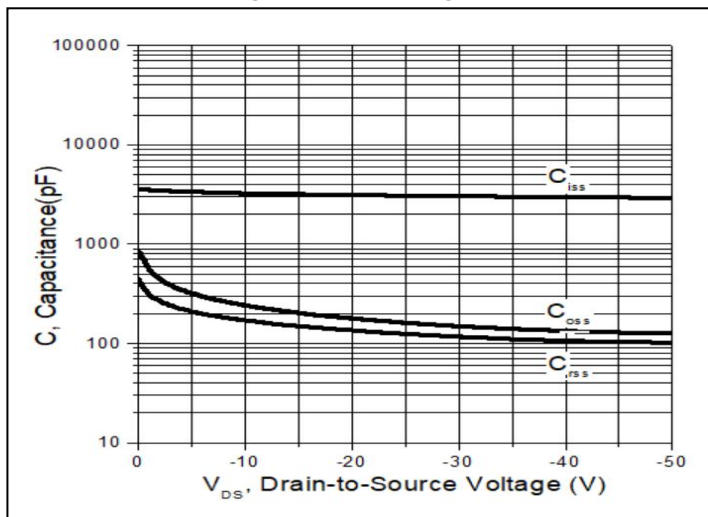
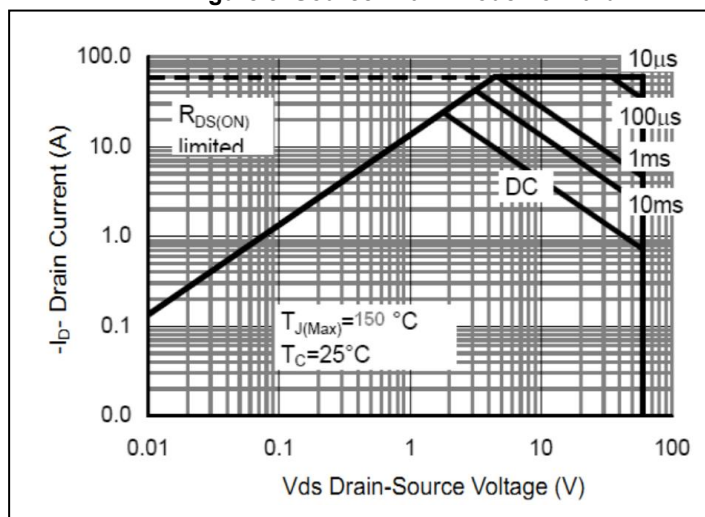
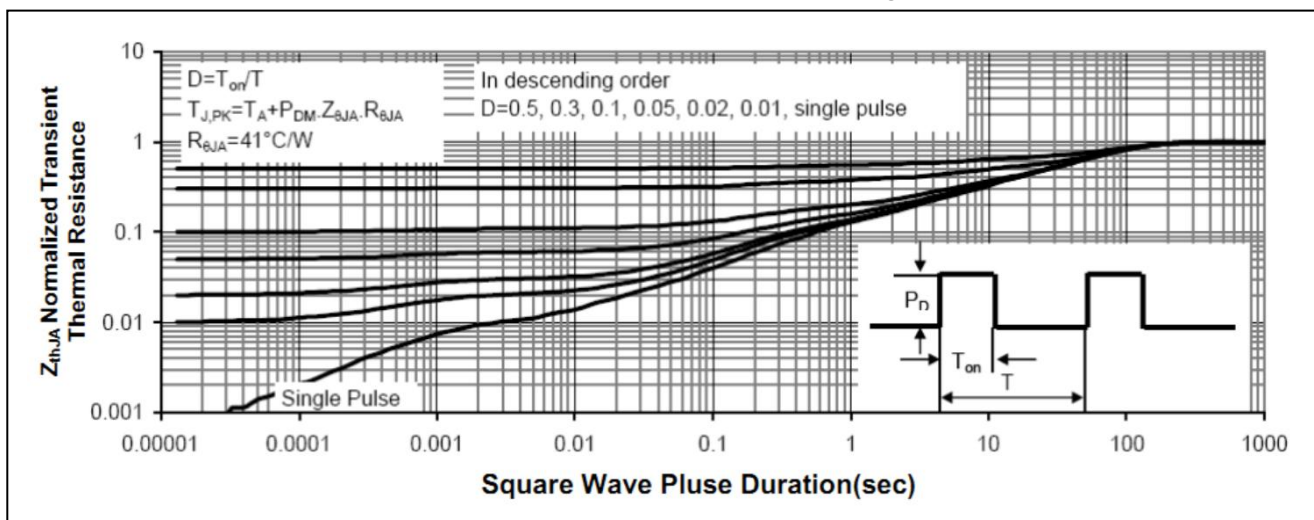
Test Circuits and Waveforms

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.

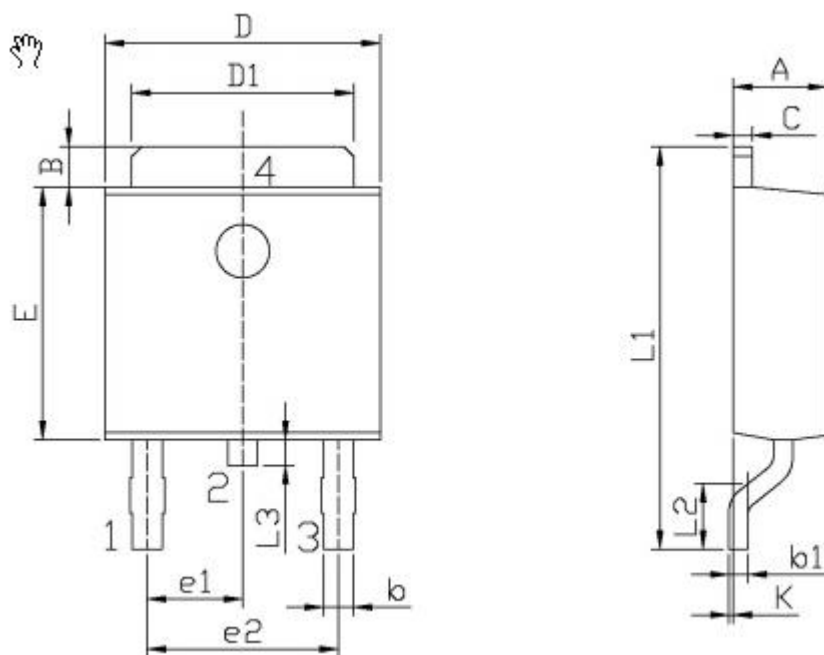
Typical Electrical and Thermal Characteristics

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)

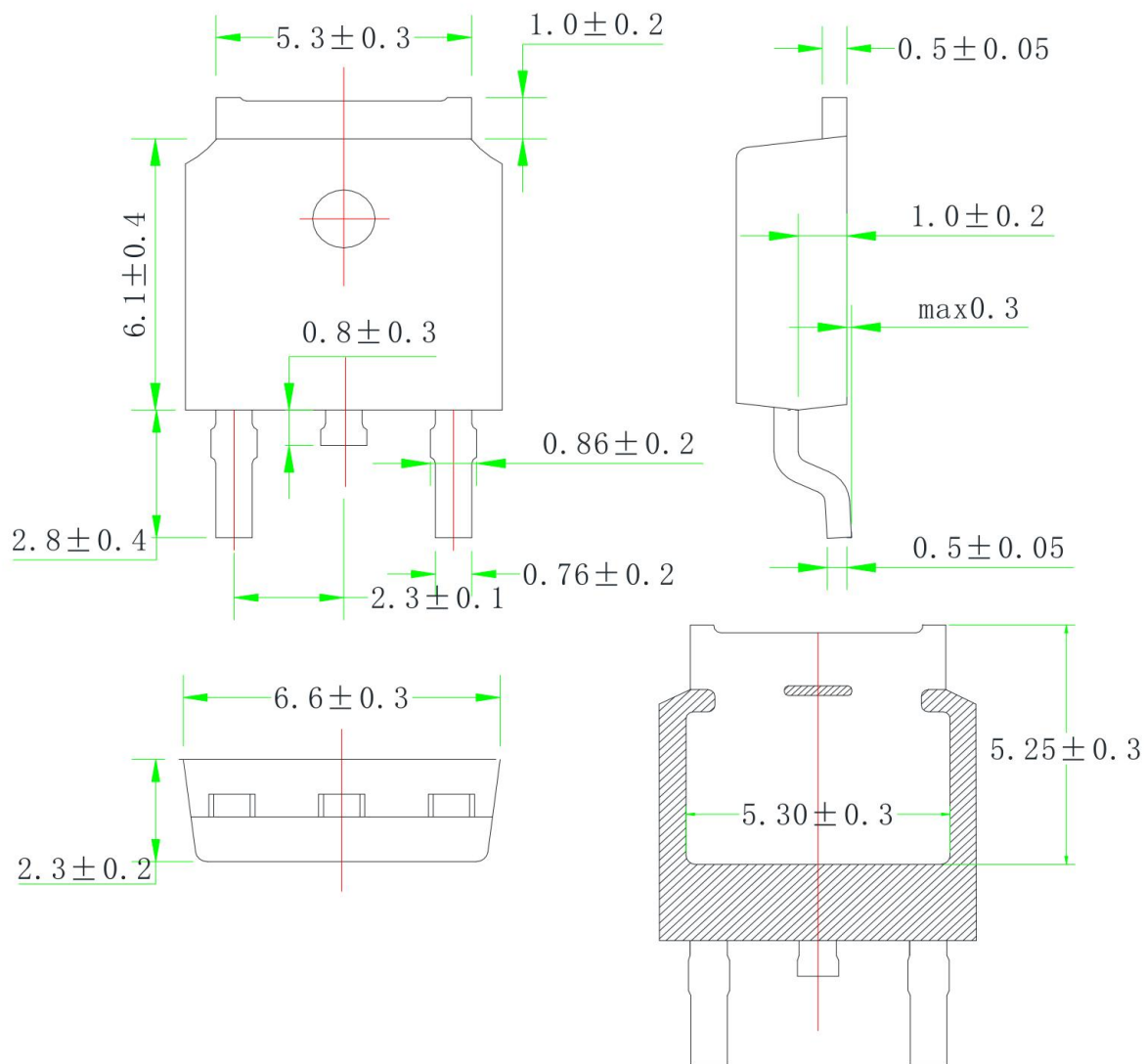
Option 1.



I

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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