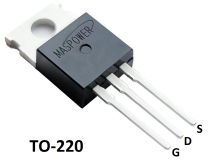
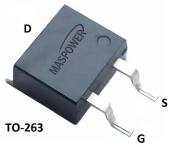
Features

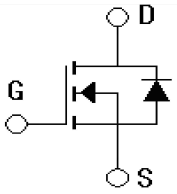
- Low gate charge
- Low Crss (Typical 82pF)
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS product





Applications

- High efficiency switch mode power supplies
- Electronic lamp ballasts based on half bridge
- UPS



Absolute Ratings (Tc=25℃)

Parameter	Symbol		Value	Unit
Drain-Source Voltage	V_{DSS}		250	V
Drain Current -continuous	I_D	T=25℃	40	A
		T=100℃	25	A
Drain Current - pulse (note1)	I_{DM}		160	A
Gate-Source Voltage	V_{GSS}		±30	V
Single Pulsed Avalanche Energy（note 2）	E_{AS}		880	mJ
Power Dissipation	PD		158	W
	TC=25℃		1.265	W/℃
Operating and Storage Temperature Range	T_j,T_{STG}		-55~+150	℃
Maximum Lead Temperature for Soldering Purposes	T_L		300	℃

*Drain current limited by maximum junction temperature

Electrical Characteristics(T_{CASE}=25℃ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Type	Max	Units
Off-Characteristics						
Drain-Source Voltage	BV_{DSS}	I_D=250uA,V_{GS}=0V	250	-	-	V
Drain cut-off current	I_{DSS}	V_{DS}=250V,V_{GS}=0V Tj=25℃	-	-	1	μA
		V_{DS}=200V,Tj=125℃	-	-	10	
Gate-body leakage current,forward	I_{GSSF}	V_{DS}=0V,V_{GS}=30V	-	-	100	nA
Gate-body leakage	I_{GSSR}	V_{DS}=0V,V_{GS}=-30V	-	-	-100	nA

current,reverse						
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	2.5	3.5	4.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=12A	-	100	120	mΩ
Forward Transconductance	g_{fs}	V_{DS} =40V , I_D=20A(note4)	-	27	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1.0MHZ (Note 4)	-	3300	4000	pF
Output capacitance	C_{oss}		-	650	800	pF
Reverse transfer capacitance	C_{rss}		-	82	105	pF
Switching Characteristics						
Turn-On delay time	$t_{d(on)}$	V_{DD}=125V,I_D=40A, R_G=25Ω，V_{GS}=10V (Note 4,5)	-	80	115	ns
Turn-On rise time	t_r		-	600	930	ns
Turn-Off delay time	$t_{d(off)}$		-	145	185	ns
Turn-Off Fall time	t_f		-	180	234	ns
Total Gate Charge	Q_g	V_{DS}=200V, I_D=40A, V_{GS}=10V(note 4,5)	-	87	110	nC
Gate-Source charge	Q_{gs}		-	25	-	nC
Gate-Drain charge	Qgd		-	42	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=10A (note3)	-	0.82	1.5	V
Maximum Continuous Drain-Source Diode Forward Current	I_S		-	-	40	A
Reverse recovery time	t_{rr}	V_{GS}=0V,I_F=40A dI_F/dt=100A/us(note 4)	-	210	-	ns
Reverse recovery charge	Q_{rr}		-	2.1	-	uC

Thermal Characteristic

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.79	℃/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	℃/W

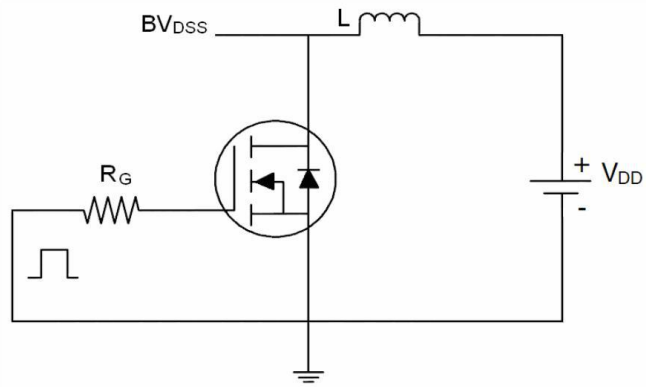
Notes:

1. Pulse width limited by maximum junction temperature
2. L=1.1mH, IAS=40A, VDD=50V, RG=25 Ω,Starting TJ=25℃
3. ISD ≤40A,di/dt ≤200A/μs, VDD≤BVDSS, Starting TJ=25℃
4. Pulse Test：Pulse Width ≤300μs, Duty Cycle≤2%

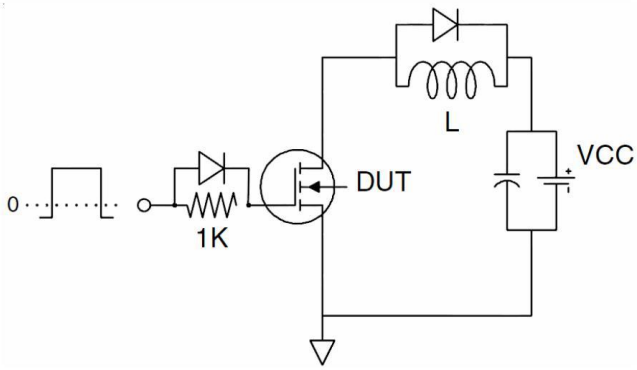
5. Essentially independent of operating temperature

Test Circuit

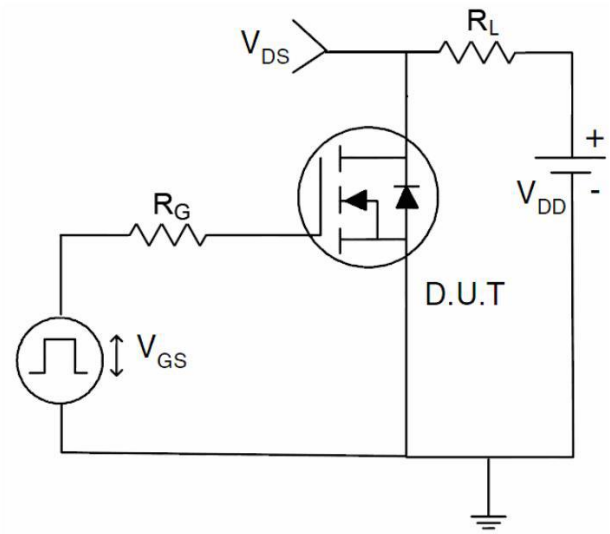
1) E_{AS} test Circuit



2) Gate charge test Circuit

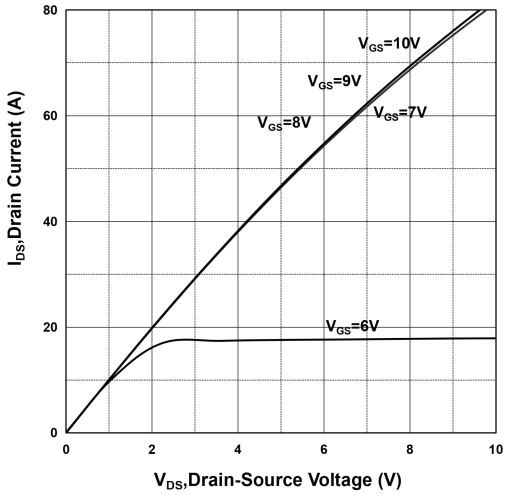


3) Switch Time Test Circuit

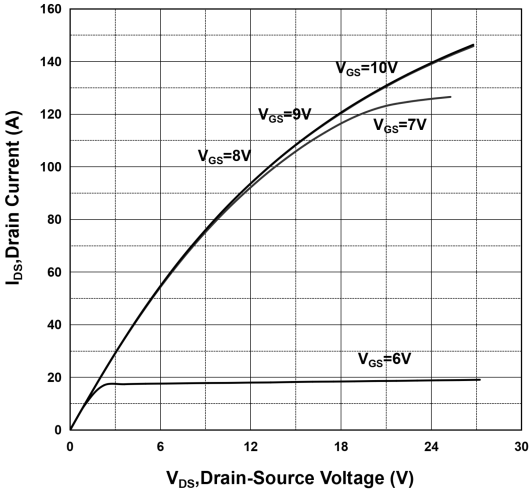


Typical Electrical and Thermal Characteristics (Curves)

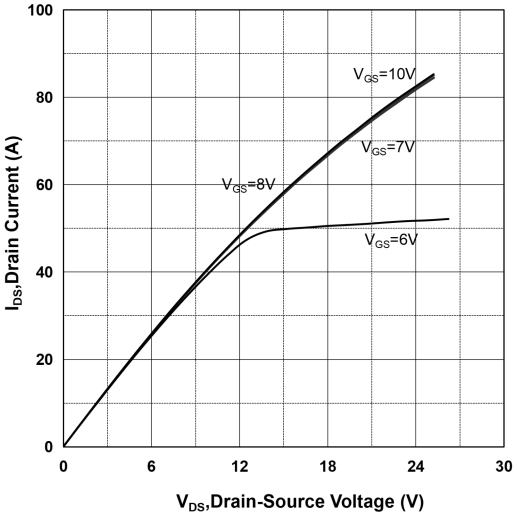
On-Region Characteristic@25℃



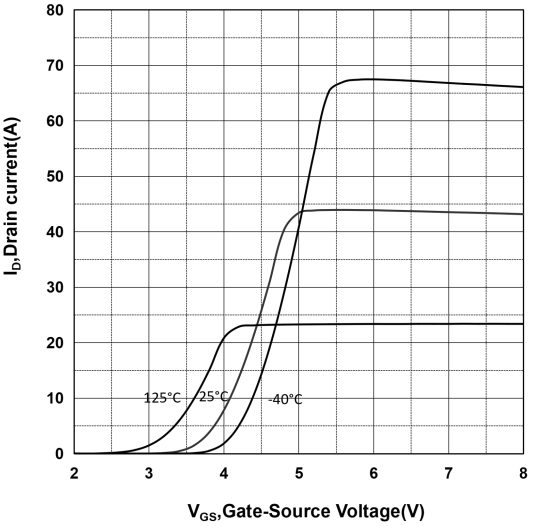
Extended On-Region Characheristic@25℃



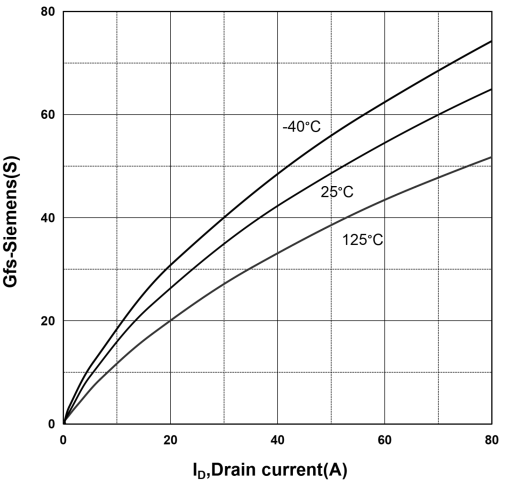
On-Region Characteristic@125℃



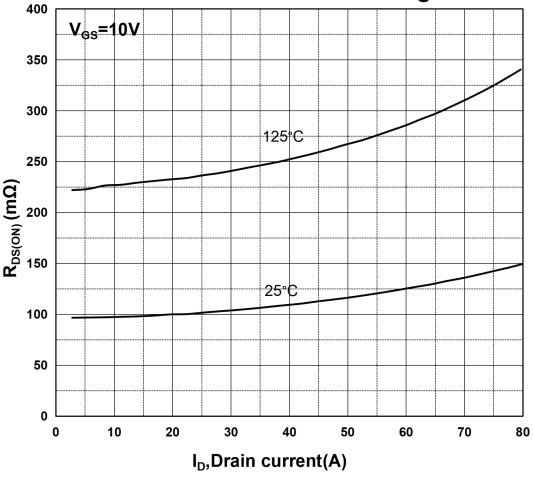
Transfer Characteristics



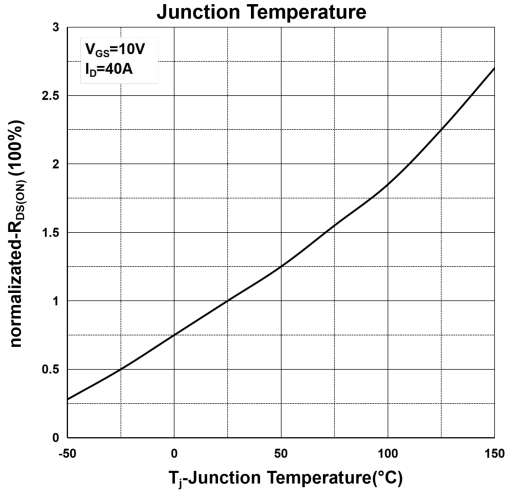
Transconductance



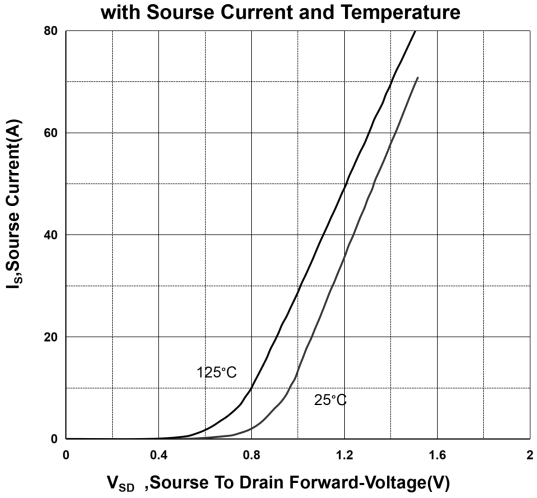
On-Resistance Variation vs Drain Current and Gate Voltage



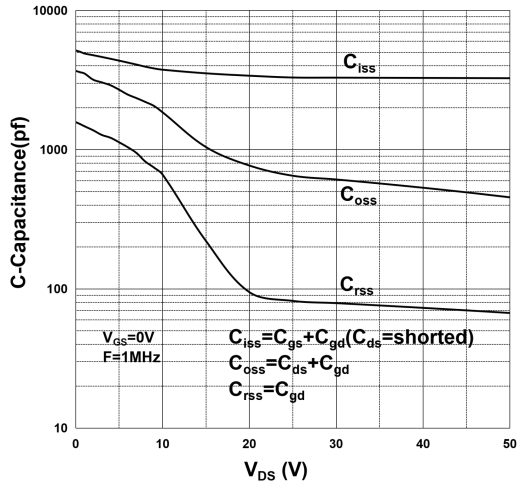
Normalizated On-Resistance Variation vs Junction Temperature



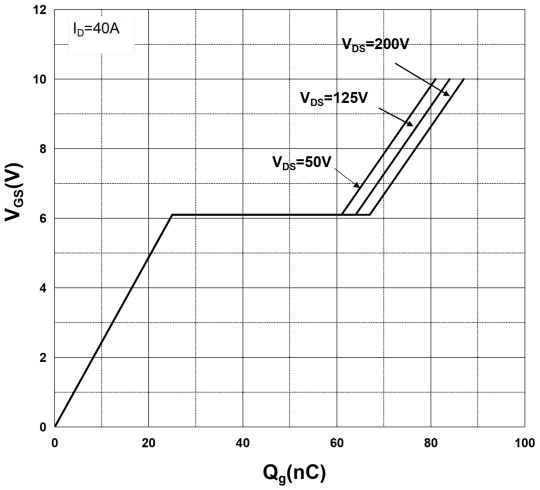
Body Diode Forward Voltage Variation with Sourse Current and Temperature



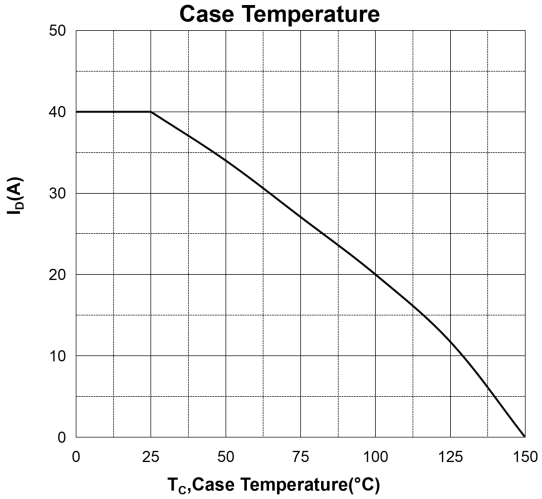
Capacitance



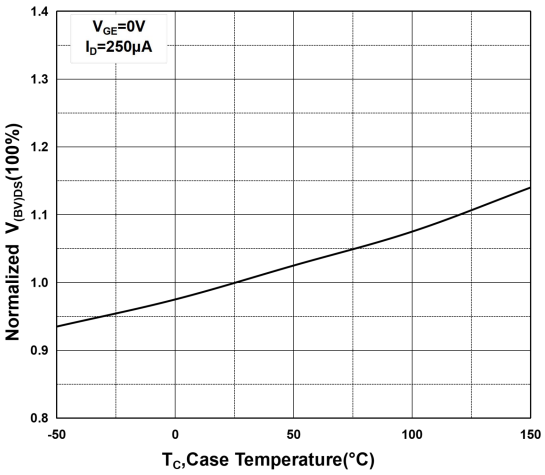
Gate Charge



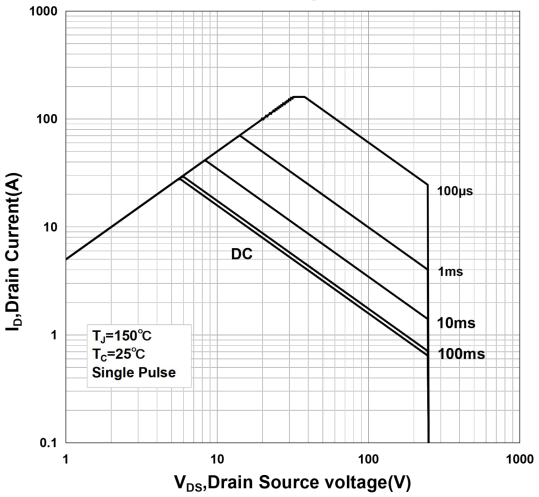
Maximum Drain Current vs Case Temperature



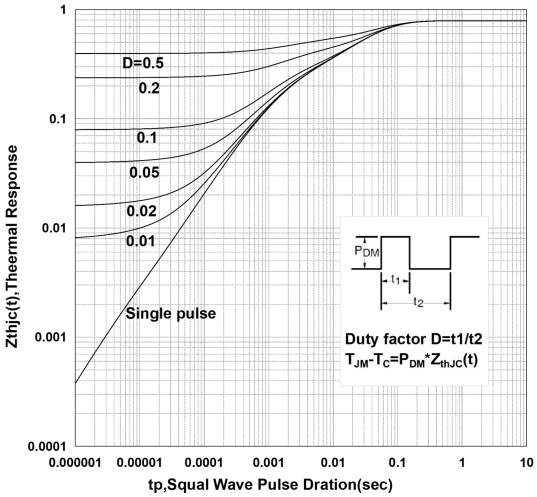
Normalized $V_{(BV)DS}$ vs temperature



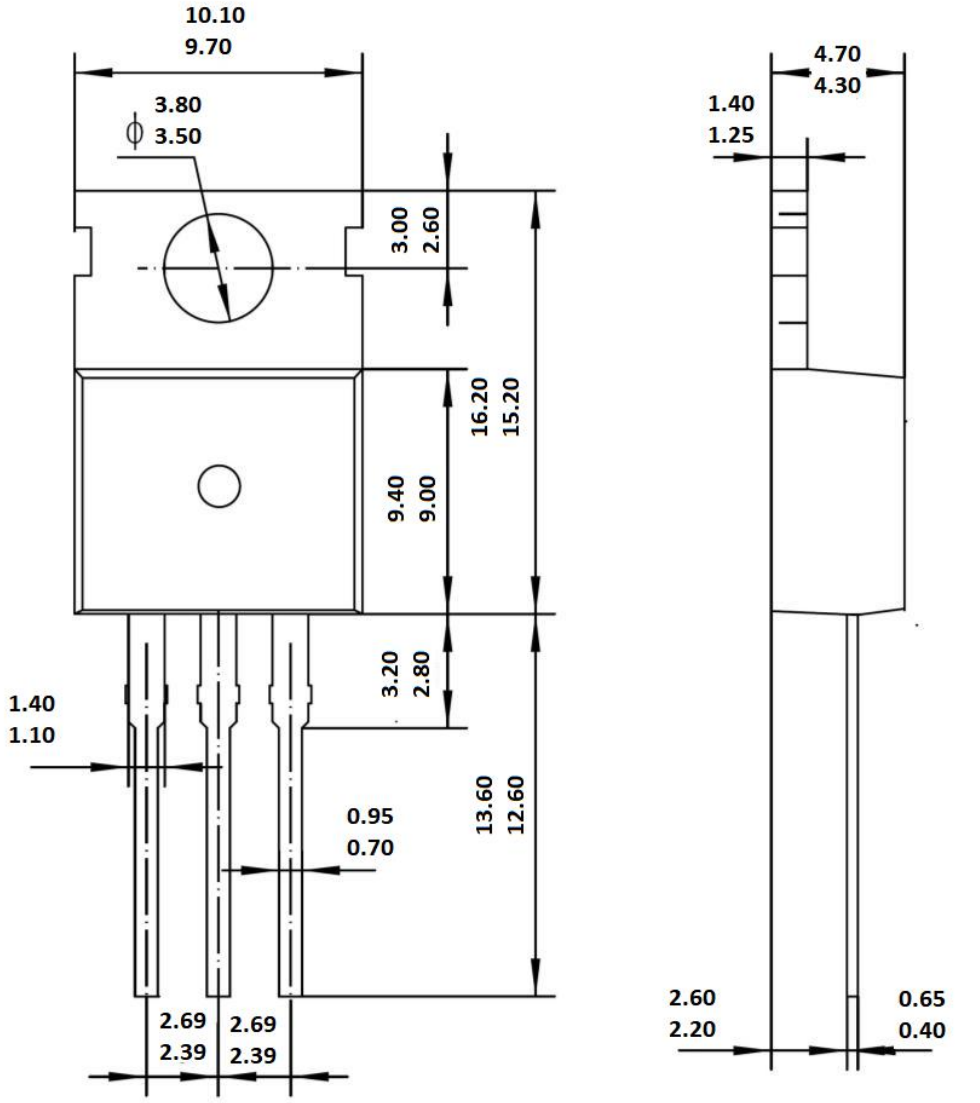
Safe Operating Area



Transient response Curve



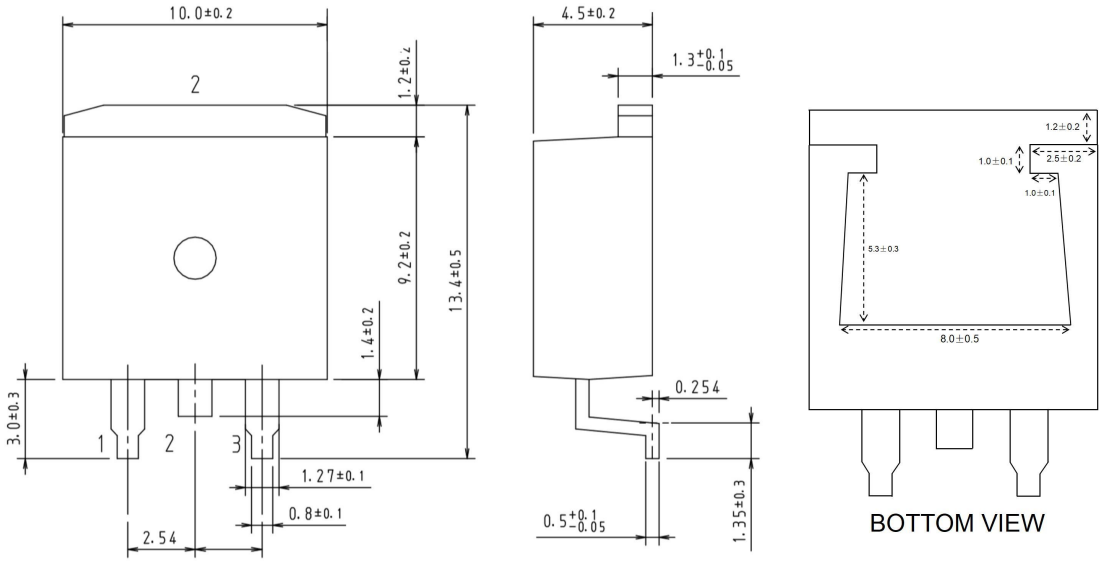
Package Mechanical DATA





TO-220

Unit: mm



TO-263

Unit:mm

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