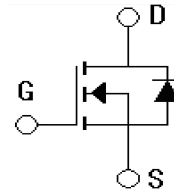
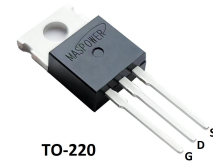


Features

- 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°C)

Parameter	Symbol		Value	Unit
Drain-Source Voltage	V _{DSS}		250	V
Transient Gate-Source Voltage	V _{GSM}		±30	V
Continuous Gate-Source Voltage	V _{GSS}		±20	V
Drain Current -continuous	I _D	T=25℃	40	A
		T=100℃	25	A
Drain Current - pulse (note1)	I _{DM}		160	A
Single Pulsed Avalanche Energy（note 2）	E _{AS}		880	mJ
Power Dissipation	P _D	T _C =25℃	158	W
		T _C =100℃	63	W
Operating and Storage Temperature Range	T _j ,T _{STG}		-55~+150	℃
Maximum Lead Temperature for Soldering Purposes	T _L		300	℃

Electrical Characteristics(T_{CASE}=25°C 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 T _j =25°C	-	-	1	μA
		V _{DS} =200V, T _j =125°C	-	-	10	
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
On-Characteristics						

Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	2.0	3.0	4.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =1A	-	80	106	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	Q _{gd}		-	42	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =1A (note3)	-	0.72	1.5	V
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 Characteristics

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

Ordering Information

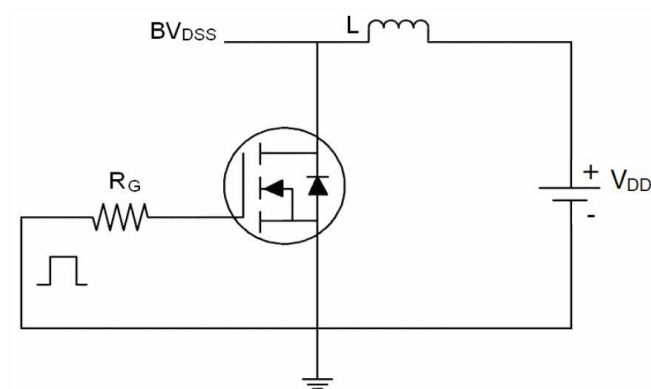
Ordering Code	Silkscreen	Package
MS40N25HGT0	MS40N25HGT0	To-220
MS40N25HGE0	MS40N25HGE0	TO-263

Notes:

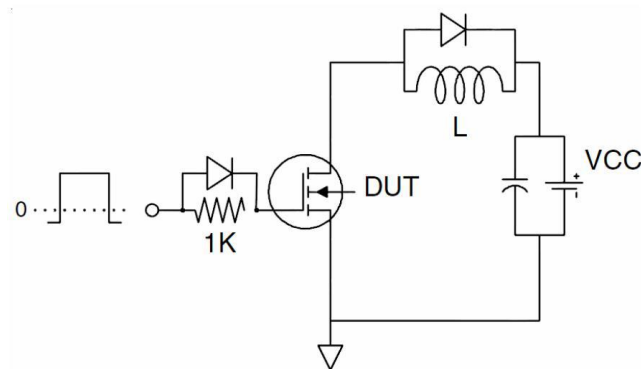
- Pulse width limited by maximum junction temperature
- $L=1.1mH, I_{AS}=40A, V_{DD}=50V, R_G=25\Omega$, Starting $T_J=25^{\circ}C$
- $I_{SD} \leq 40A, di/dt \leq 200A/\mu s, V_{DD} \leq BV_{DSS}$, Starting $T_J=25^{\circ}C$
- Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
- Essentially independent of operating temperature

Test Circuit

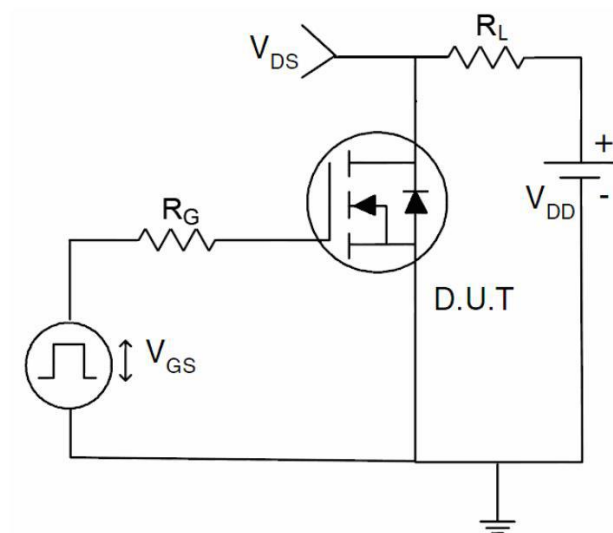
1) E_{AS} test Circuit



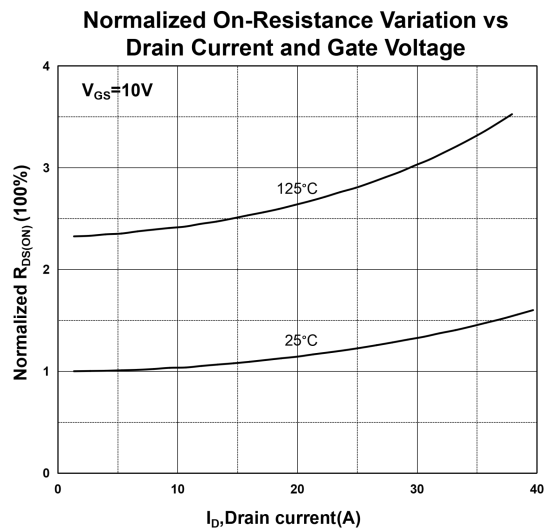
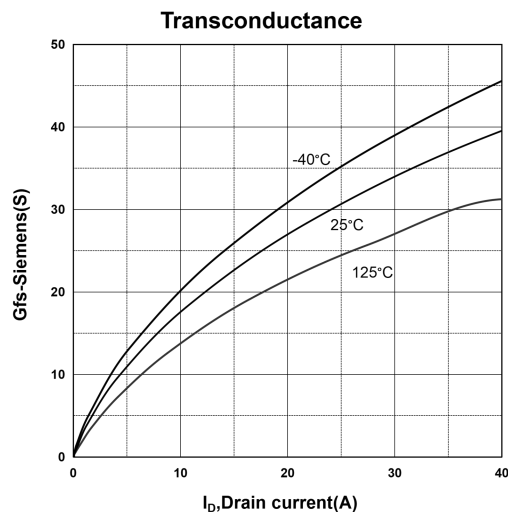
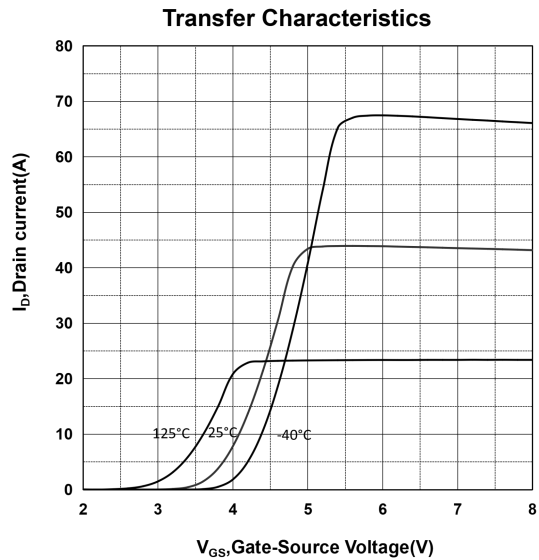
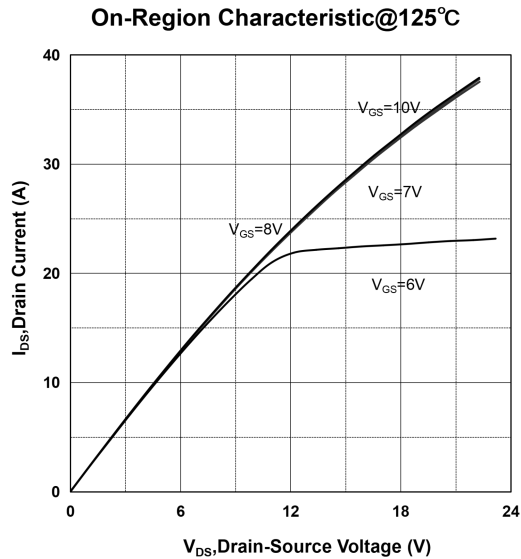
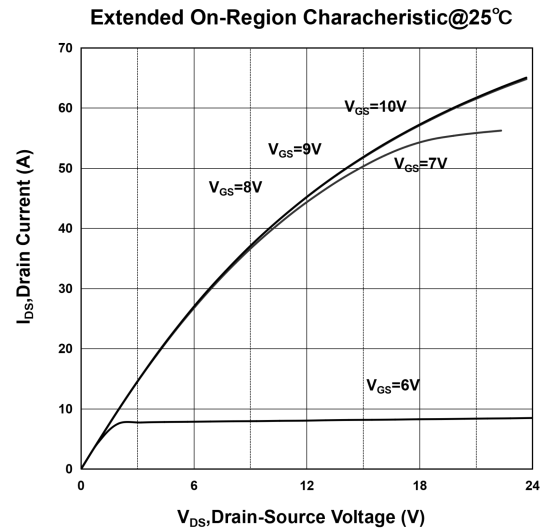
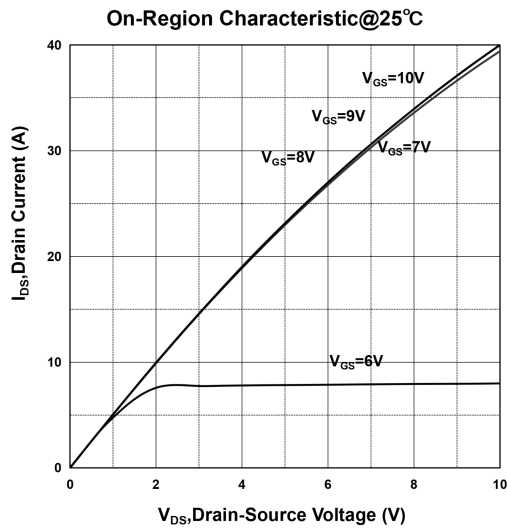
2) Gate charge test Circuit

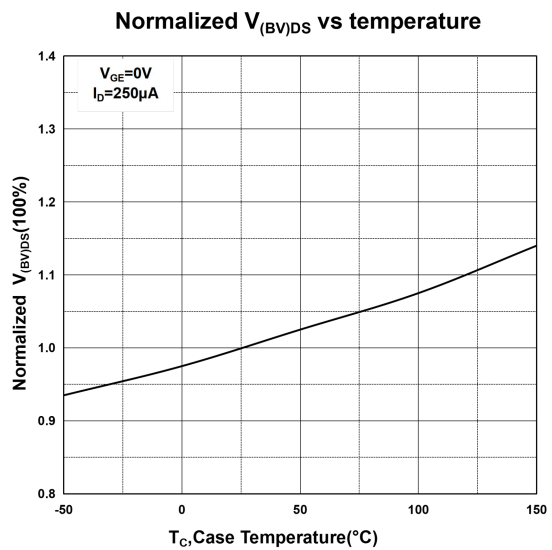
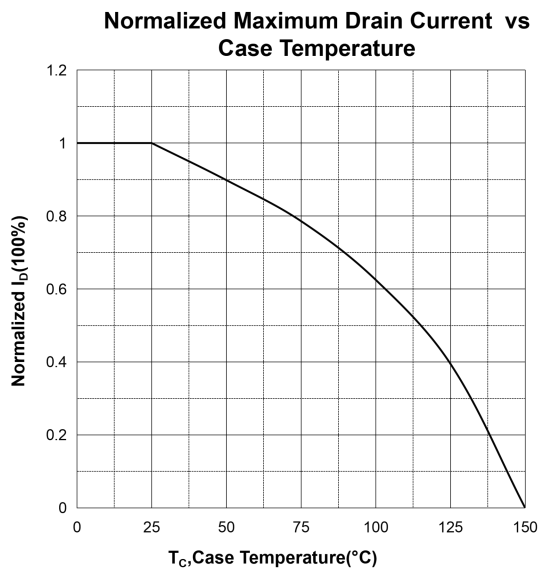
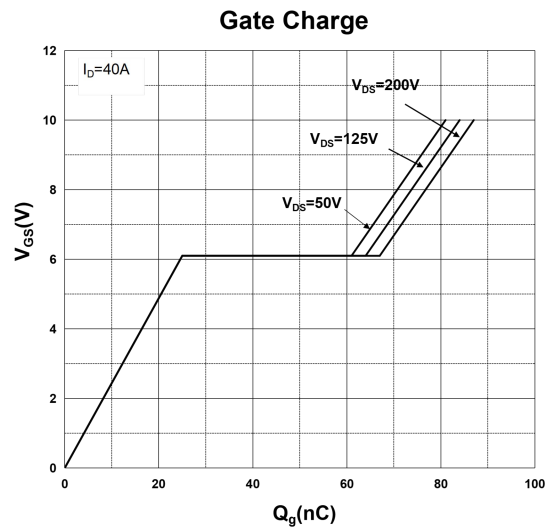
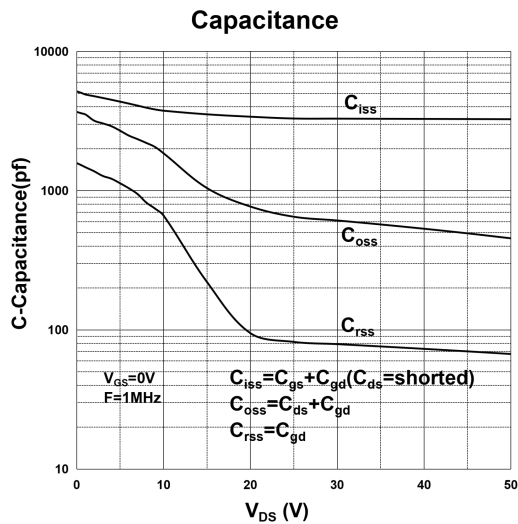
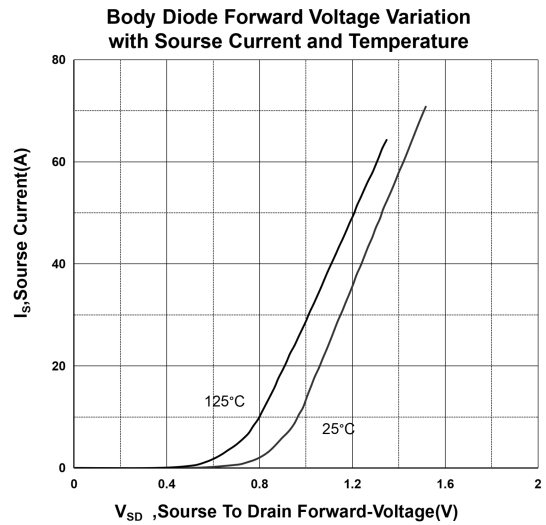
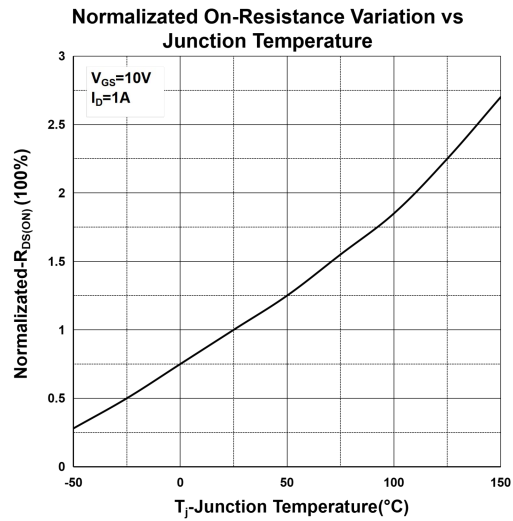


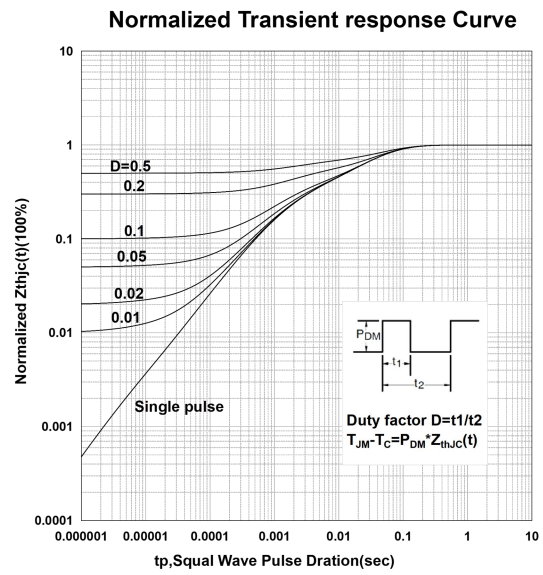
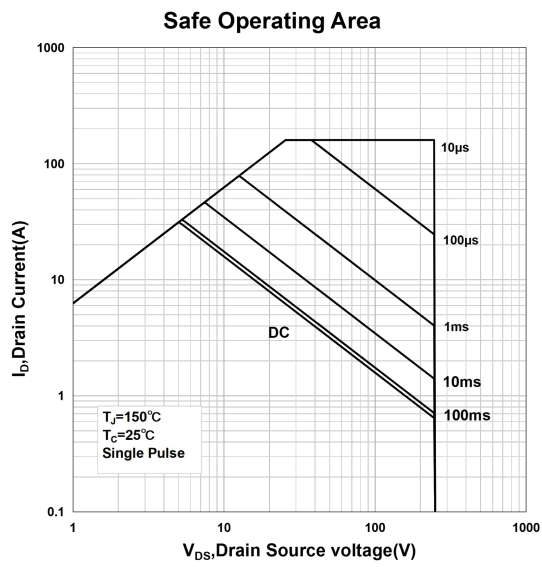
3) Switch Time Test Circuit



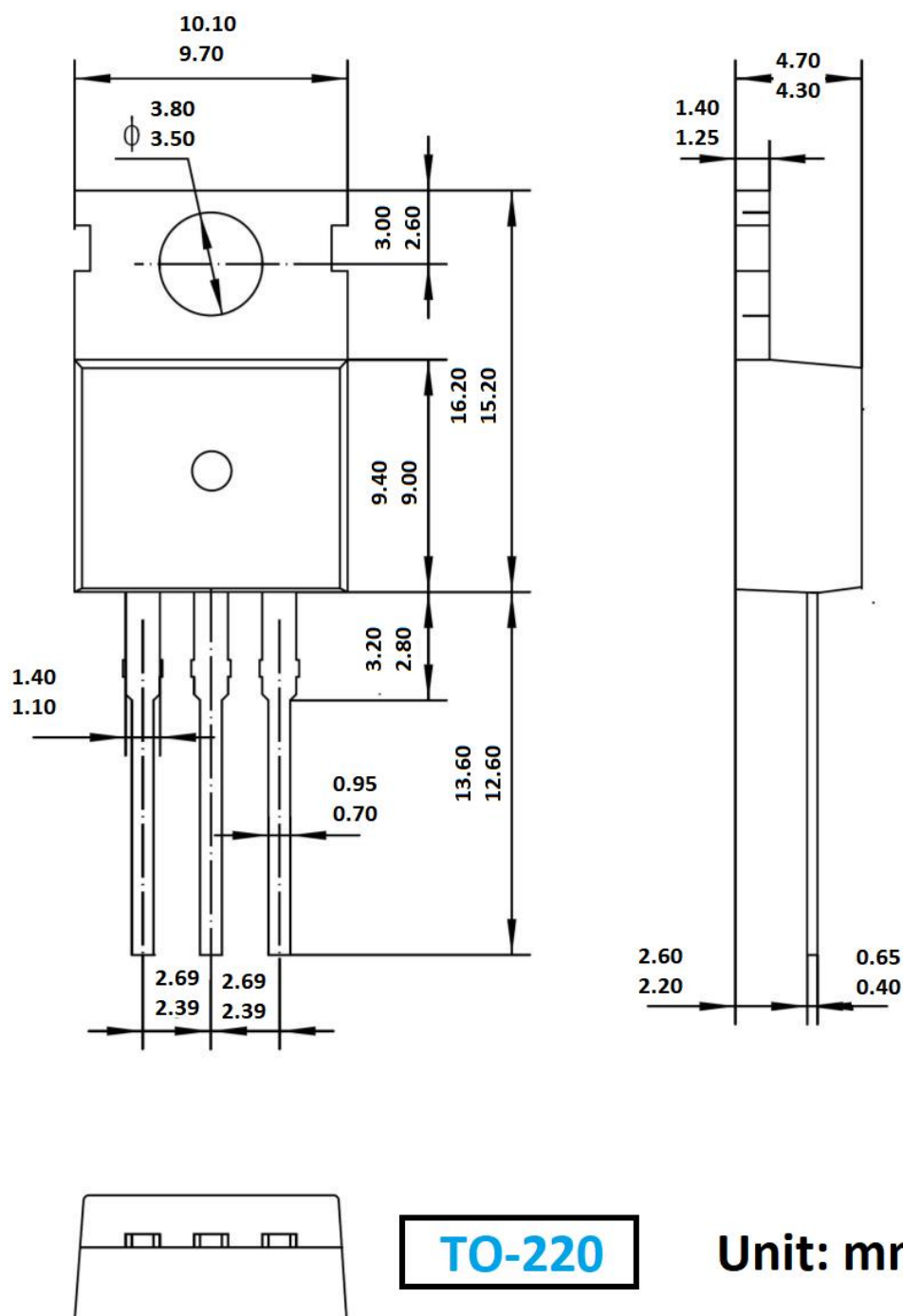
Typical Electrical and Thermal Characteristics (Curves)

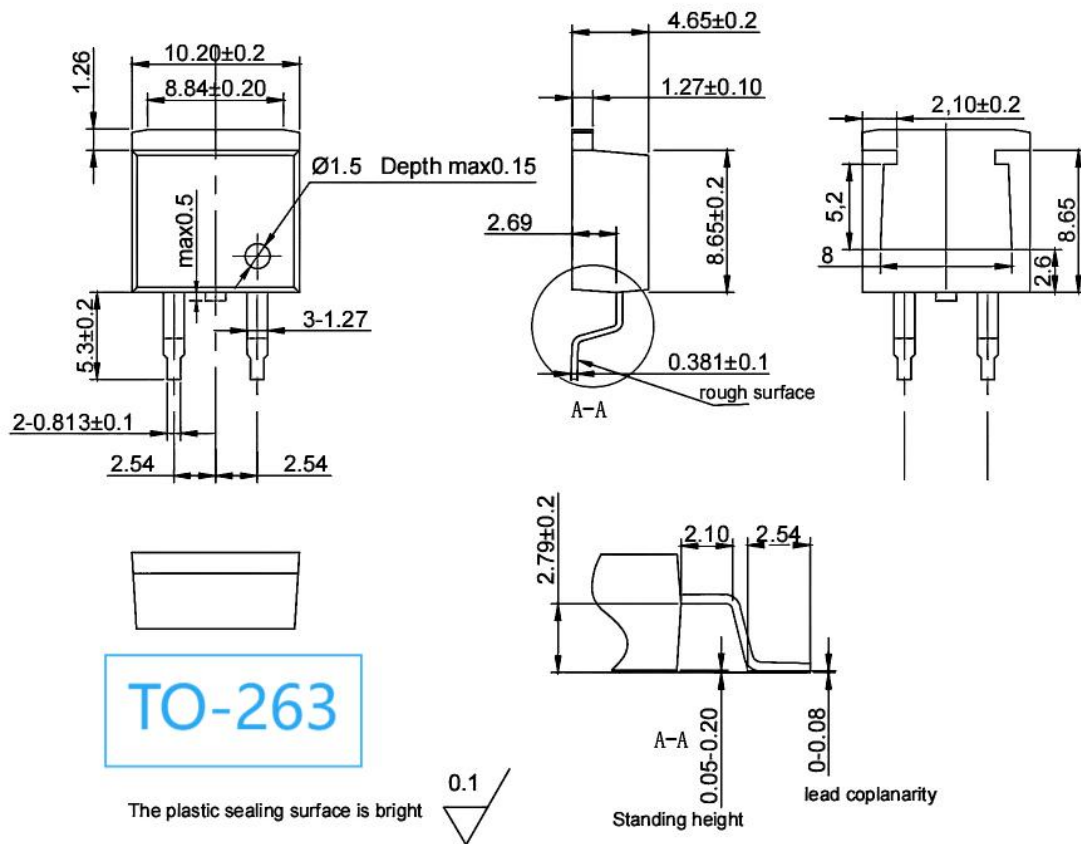






Package Mechanical DATA





Notes:

1. unmarked tolerance $\pm 0.15\text{mm}$; unmarked $R < 0.15\text{mm}$
2. The resin body is not allowed to have defects, shrinkage holes, cracks, bubbles and other harmful defects
3. The drawing indicates that the leg has reinforcement
4. The top pinhole is not allowed to protrude the surface of the plastic sealing body
5. Unit: mm