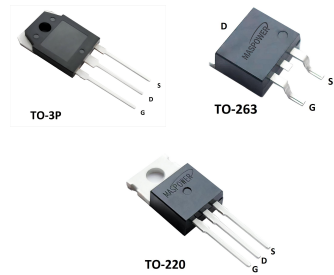


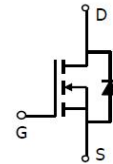
Features

- $V_{DS}=150V$, $I_D=120A$
- $R_{DS(ON)}<7.2m\Omega@V_{GS}=10V$
- High density cell design for ultra low R_{dson}
- Low gate charge
- Improved dv/dt capability



Applications

- Switching applications
- Isolated DC/DC converters in Telecom and Industrial
- Synchronous Rectification in DC/DC Converters



Absolute Maximum Ratings($T_a=25^\circ C$)

Characteristics		Symbol	Rating	Unit
Drain-source Voltage		V_{DSS}	150	V
Transient Gate-Source Voltage		V_{GSM}	± 30	V
Continuous Gate-Source Voltage		V_{GSS}	± 20	V
Continuous Drain Current ⁽¹⁾	$T_C=25^\circ C$ (Silicon Limited)	I_D	150	A
	$T_C=25^\circ C$ (Package Limited)		120	
	$T_C=100^\circ C$		90	
Pulsed Drain Current ⁽³⁾		I_{DM}	460	
Power Dissipation	$T_C=25^\circ C$	P_D	312	W
	$T_C=100^\circ C$		125	
Single Pulse Avalanche Energy ⁽²⁾		E_{AS}	520	mJ
Junction and Storage Temperature Range		T_J, T_{stg}	-55~150	$^\circ C$

Electrical Characteristics($T_J=25^\circ C$)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	150	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.8	-	3.9	
Drain Cut-Off Current	I_{DSS}	$V_{DS}=120V, V_{GS}=0V$	-	-	1	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 0.1	

Drain-Source ON Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=50A$	-	5.8	7.2	mΩ
Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=100A$	-	68	-	S
Dynamic Characteristics						
Total Gate Charge	Q_g	$V_{DS}=50V, I_D=50A, V_{GS}=10V$	-	89	-	nC
Gate-Source Charge	Q_{gs}		-	32	-	
Gate-Drain Charge	Q_{gd}		-	22	-	
Input Capacitance	C_{iss}	$V_{DS}=40V, V_{GS}=0V, f=1.0MHz$	-	6,180	-	pF
Output Capacitance	C_{oss}		-	2,130	-	
Reverse Transfer Capacitance	C_{rss}		-	96	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=50V, I_D=50A, R_G=3.0\Omega$	-	39	-	ns
Rise Time	t_r		-	26	-	
Turn-Off Delay Time	$t_{d(off)}$		-	66	-	
Fall Time	t_f		-	19	-	
Gate Resistance	R_g	$f=1MHz$	-	3.3	-	Ω
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	$I_S=50A, V_{GS}=0V$	-	0.8	1.22	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F=50A, di/dt=100A/us$	-	160	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	627	-	nC

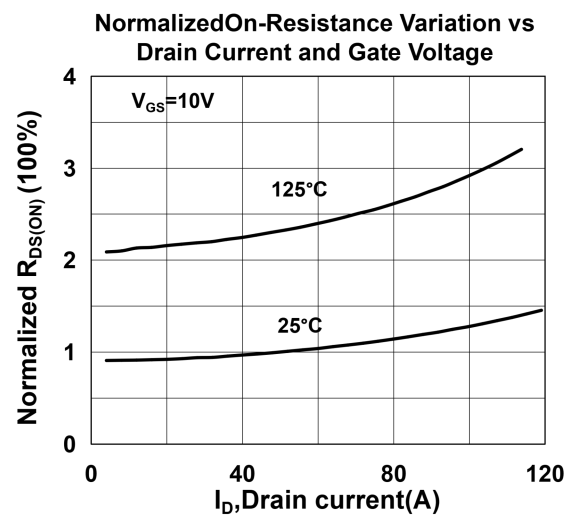
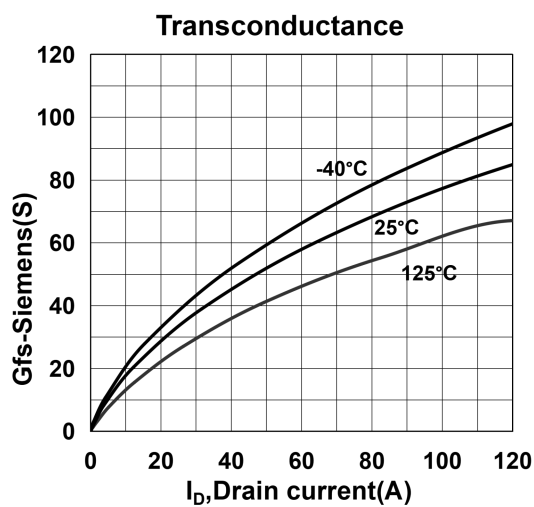
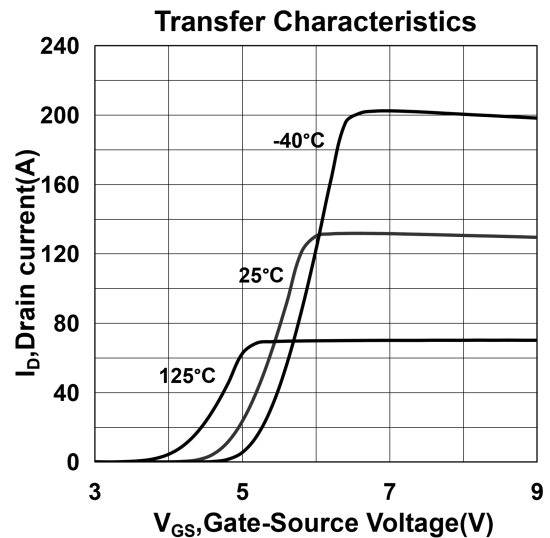
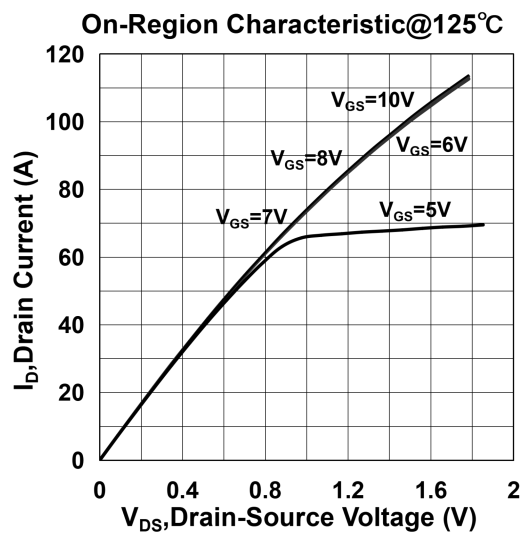
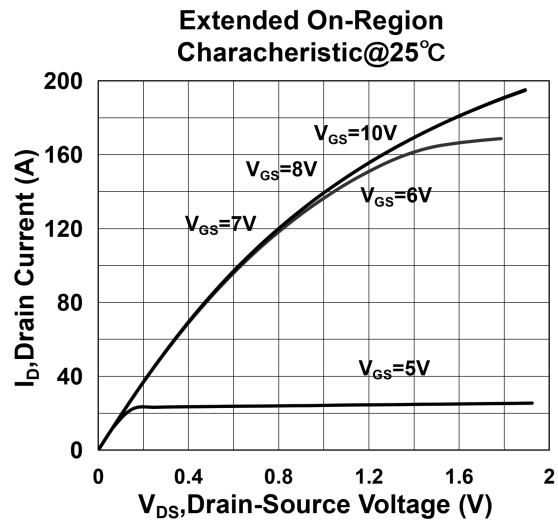
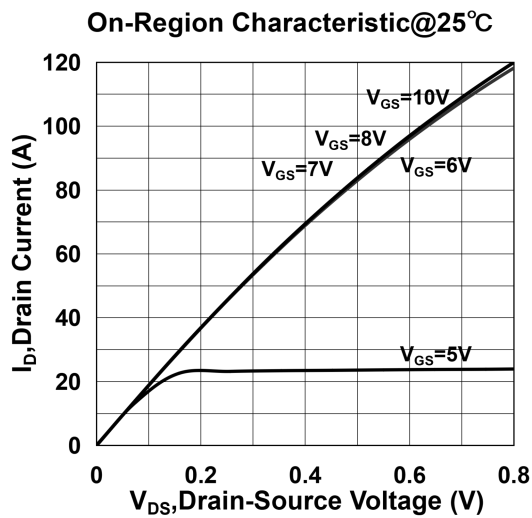
Thermal Characteristics

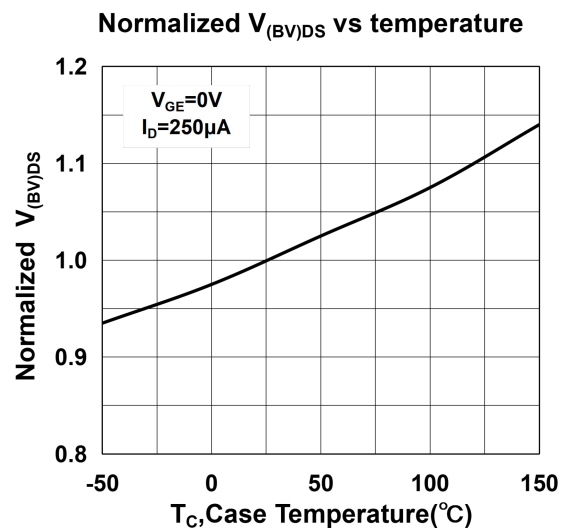
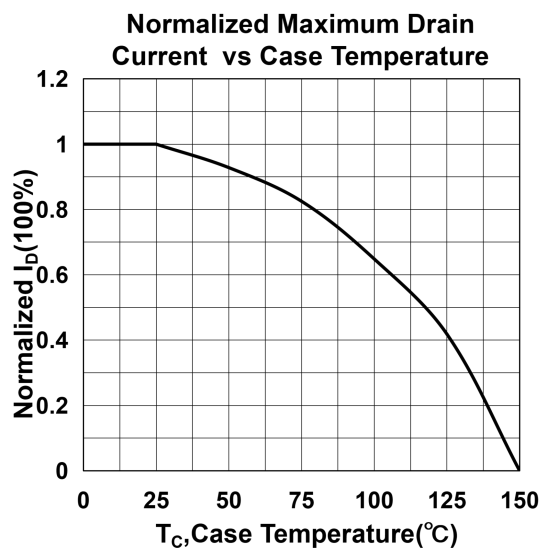
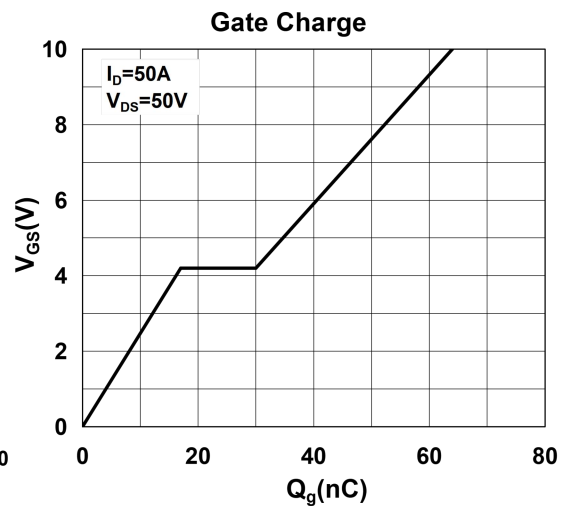
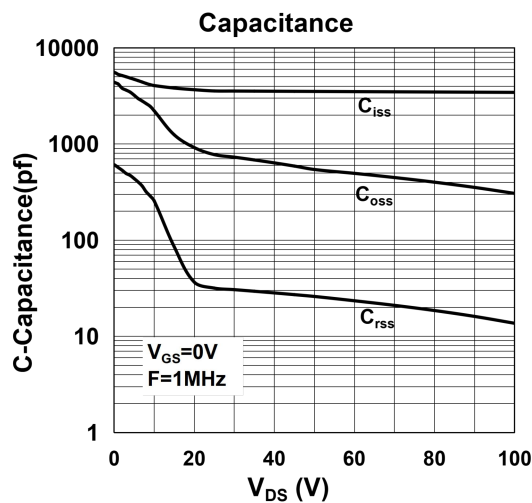
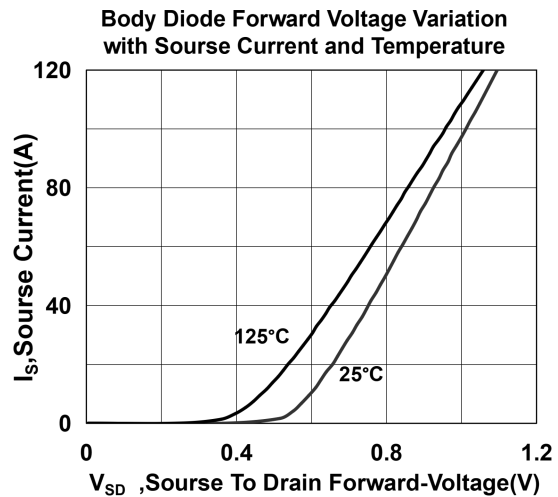
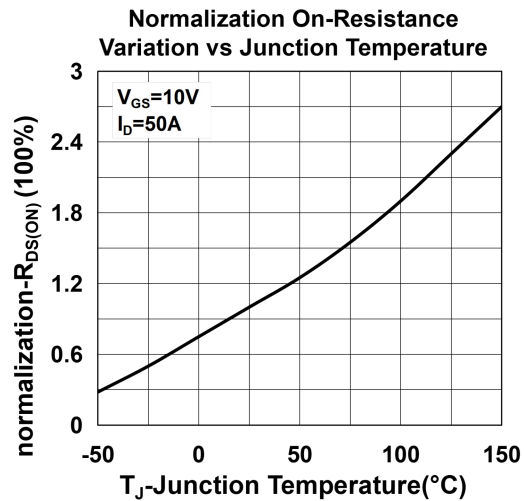
Characteristics	Symbol	Rating	Unit
Thermal Resistance, Junction-to-Ambient ⁽¹⁾	$R_{\theta JA}$	62.5	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.4	

Ordering Information

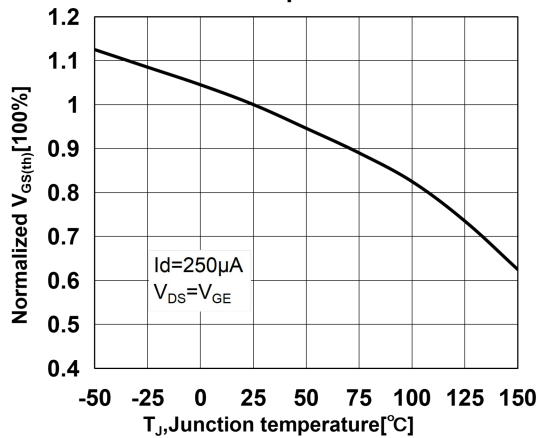
Part Number	Package	Packing
MS120N15FT	TO-220	Tube
MS120N15FE	TO-263	Tube
MS120N15FB	TO-3PB	Tube

Electrical characteristics(Curves)

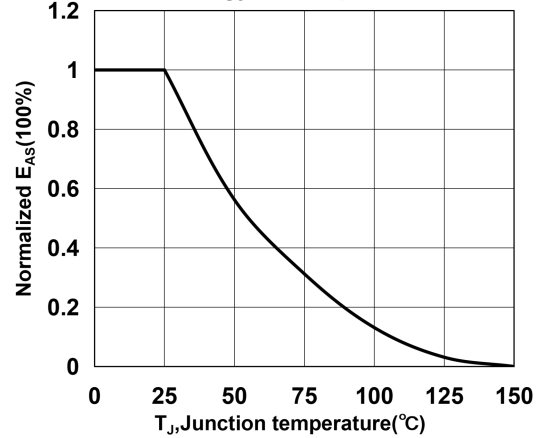




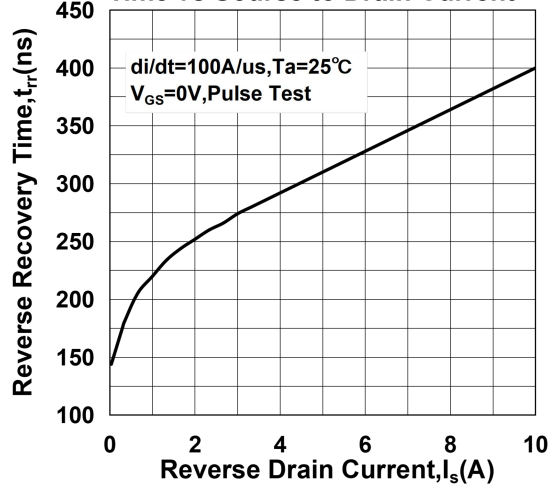
Normalized gate threshold voltage
vs temperature



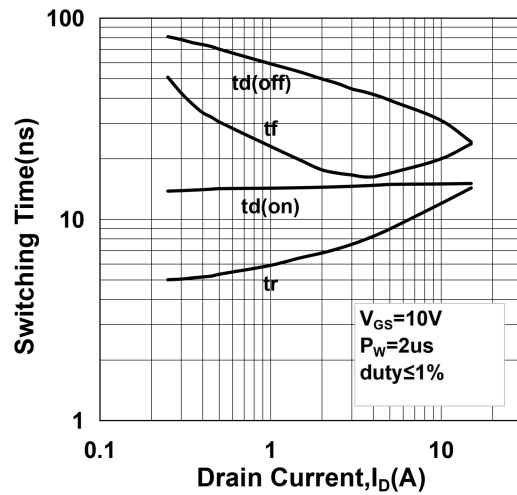
Normalized maximum avalanche
energy vs temperature



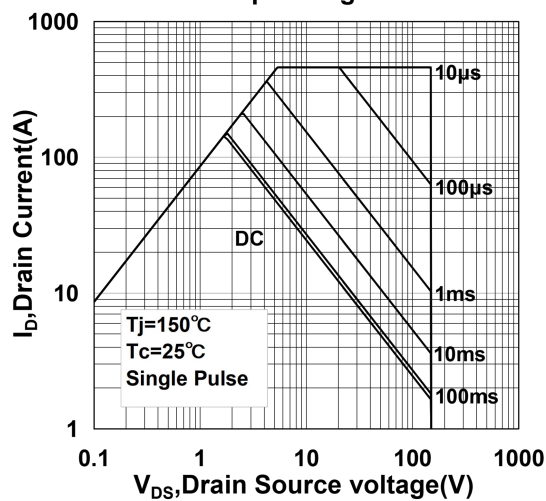
Body Diode Reverse Recovery
Time vs Source to Drain Current



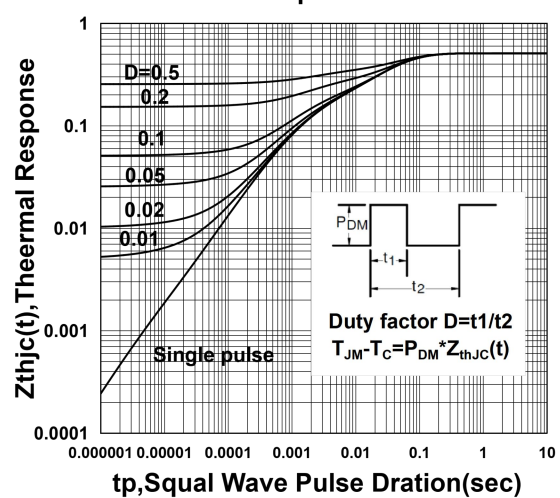
Switching Characteristics

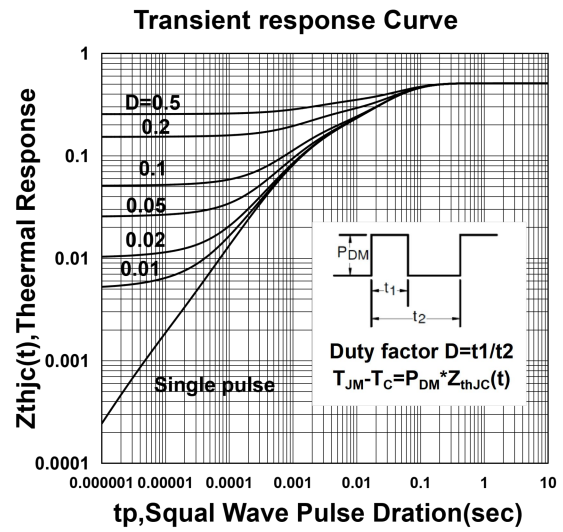
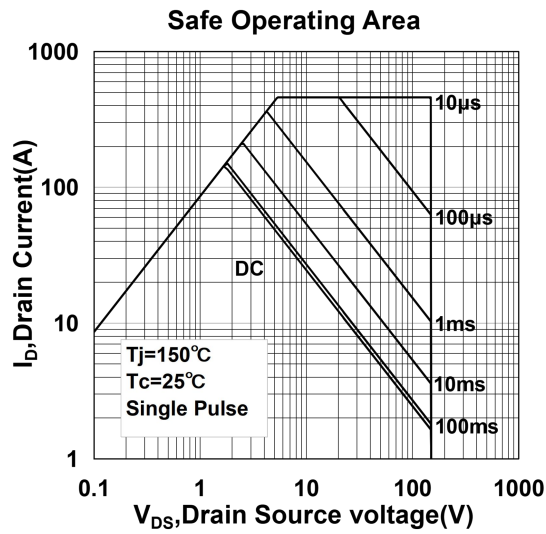


Safe Operating Area

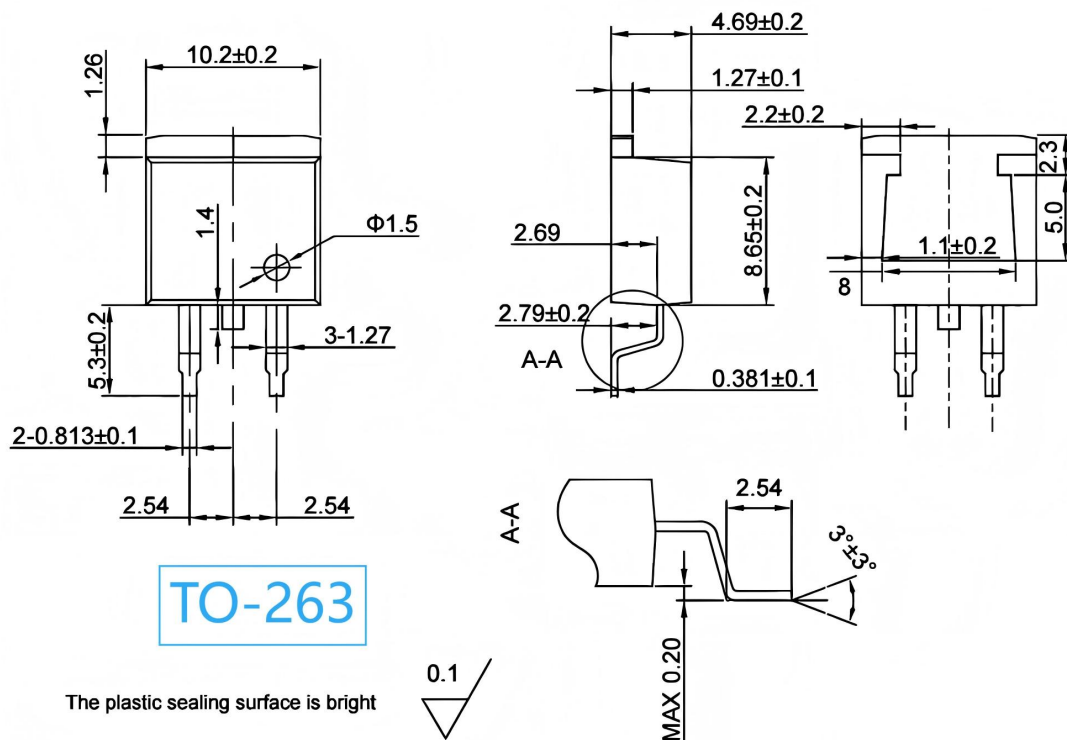


Transient response Curve





Package Mechanical Data



Notes:

1. Unmarked tolerance±0.15mm;unmarked R<0.15mm
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. Unit : mm

