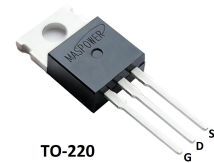
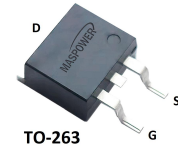
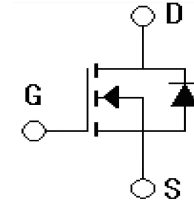


Features

- Low gate charge
- Low Crss (typical 25pF)
- 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}	200	V
Transient Gate-Source Voltage		V_{GSM}	±30	V
Continuous Gate-Source Voltage		V_{GSS}	±20	V
Drain Current -continuous		$I_D, T_C=25^{\circ}C$ $T_C=100^{\circ}C$	18	A
			16	A
Drain Current - pulse (note 1)		I_{DM}	72	A
Single Pulsed Avalanche Energy (note 2)		E_{AS}	259	mJ
Avalanche Current (note 1)		I_{AR}	18	A
Repetitive Avalanche Current (note 1)		E_{AR}	14	mJ
Peak Diode Recovery dv/dt (note 3)		dv/dt	5.5	V/ns
Power Dissipation	TO-252	PD	140	W
	TO-263		180	
	TO-220		140	
Operating and Storage Temperature Range		T_J, T_{STG}	-55~+150	°C
Maximum Lead Temperature for Soldering Purposes		T_L	300	°C

*Drain current limited by maximum junction temperature

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 =250μA, V _{GS} =0V	200	-	-	V
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _J	I _D =250μA, referenced to 25°C	-	0.2	-	V/°C
Drain cut-off current	I _{DSS}	V _{DS} =200V, V _{GS} =0V T _j =25°C	-	-	1	μA
		V _{DS} =160V, T _j =125°C	-	-	10	
Gate-body leakage current, forward	I _{GSSF}	V _{DS} =0V, V _{GS} =20V	-	-	100	nA
Gate-body leakage current, reverse	I _{GSSR}	V _{DS} =0V, V _{GS} =-20V	-	-	-100	nA
On-Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.0	-	4.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =9A	0.08	0.12	0.15	Ω
Forward Transconductance	g _{fs}	V _{DS} =40V , I _D =9A (note 4)	-	14.5	-	S
Dynamic Characteristics						
Gate resistance	R _g	F=1.0MHZ open drain	0.5	1.5	2.5	Ω
Input capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHZ	350	1001	1650	pF
Output capacitance	C _{oss}		104	173	300	pF
Reverse transfer capacitance	C _{rss}		15	25	40	pF

Switching Characteristics						
Turn-On delay time	td(on)	VDD=100V,ID=18A, RG=25Ω, VGS=10V(note 4,5)	9	15.2	21	ns
Turn-On rise time	tr		16.5	38.7	60	ns
Turn-Off delay time	td(off)		21.5	46.4	71.5	ns
Turn-Off Fall time	tf		6.8	12.8	18.8	ns
Total Gate Charge	Qg	VDS=160V, ID=18A, VGS=10V(note4,5)	12	27.5	42	nC
Gate-Source charge	Qgs		2.5	5.7	8.9	nC
Gate-Drain charge	Qgd		5.8	10.8	15.8	nC
Drain-Source Diode Characteristics						
Drain-Source Diode Forward Voltage	VSD	VGS=0V,IS=18A	-	-	1.4	V
Continuous Drain-Source	IS		-	-	18	A

Diode Forward Current					
Pulsed Drain-Source Diode Forward Current	I_{SM}		-	-	72 A
Reverse recovery time	t_{rr}	$V_{GS}=0V, I_S=18A$	124	224	324 ns
Reverse recovery charge	Q_{rr}	$dI_F/dt=100A/us$ (note 4)	0.58	1.38	2.18 uC

Thermal Characteristic

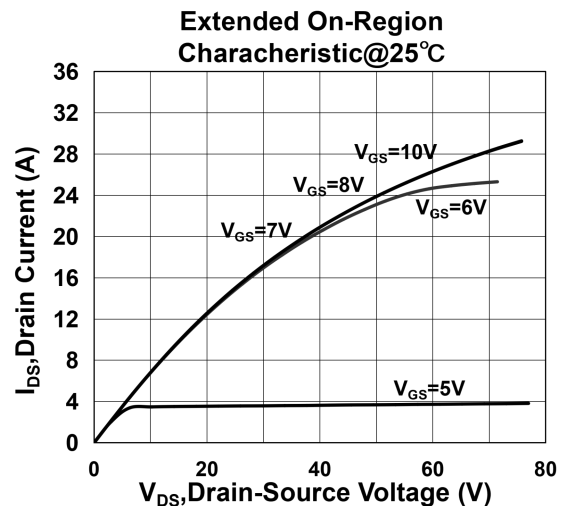
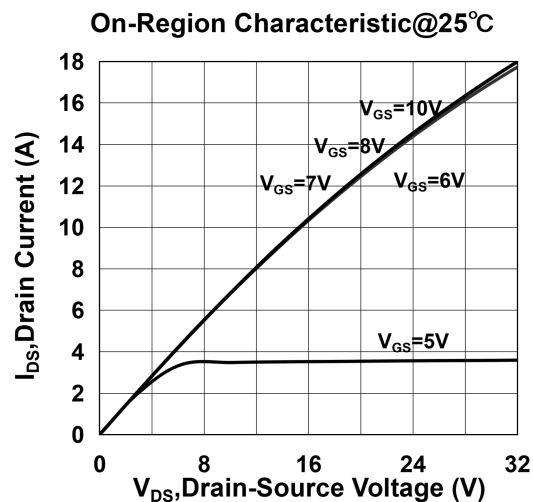
Parameter	Symbol	Value		Unit
		TO-252/ TO-220	TO-263	
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.89	0.69	$^{\circ}C/W$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	62.5	$^{\circ}C/W$

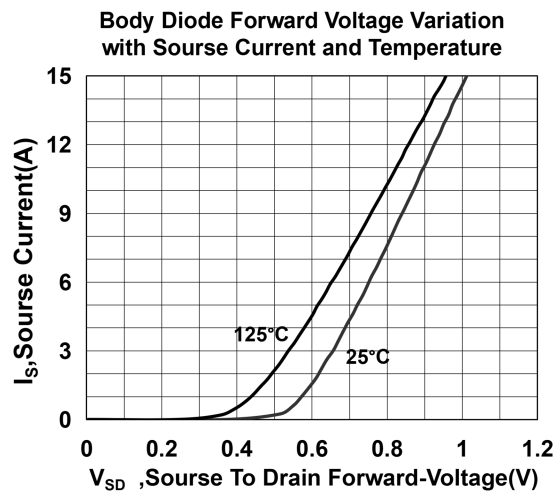
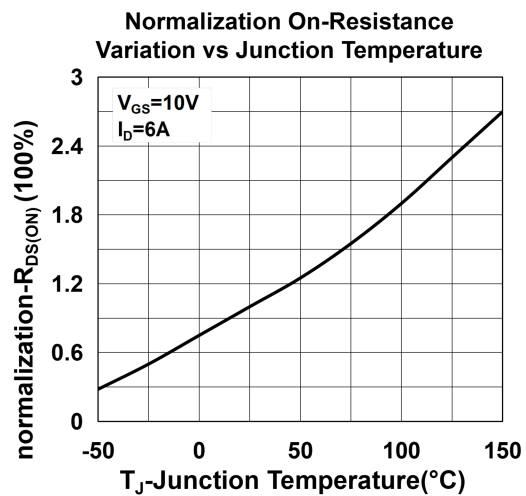
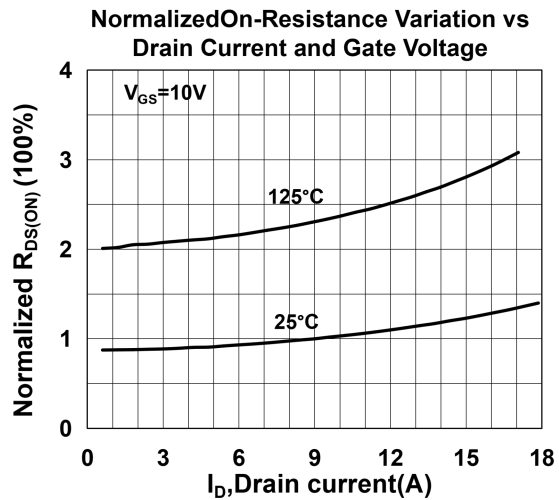
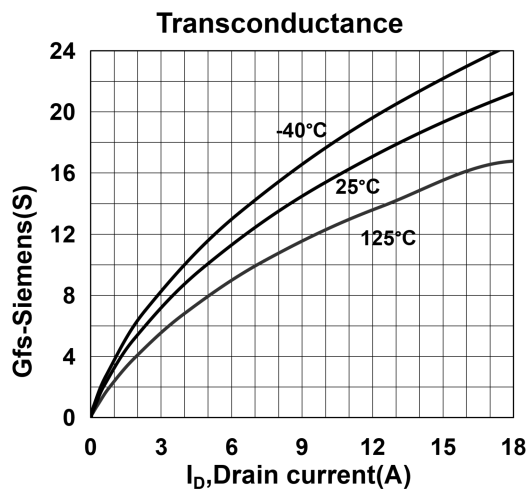
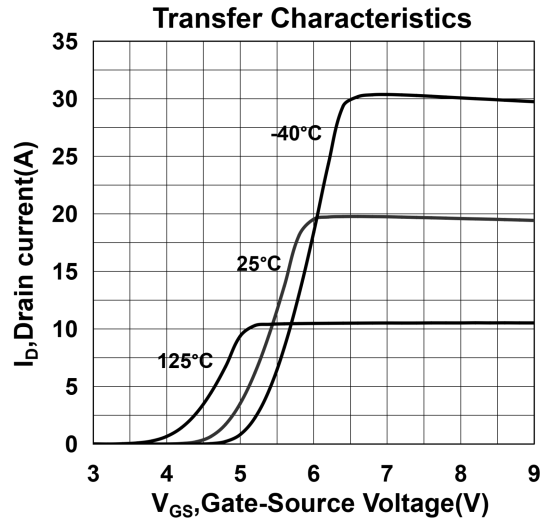
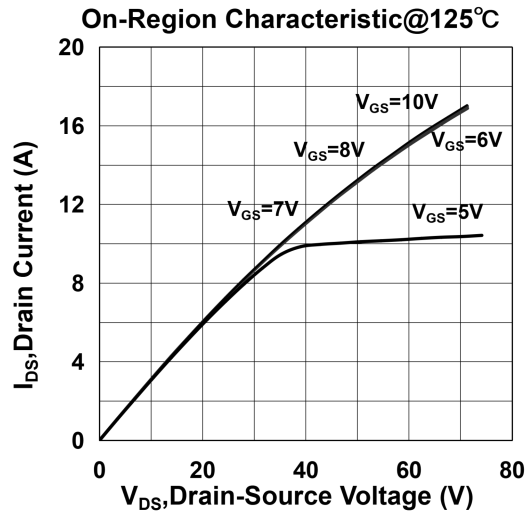
Order codes	Package
MS18N20FD	TO-252
MS18N20FT	TO-220
MS18N20FE	TO-263

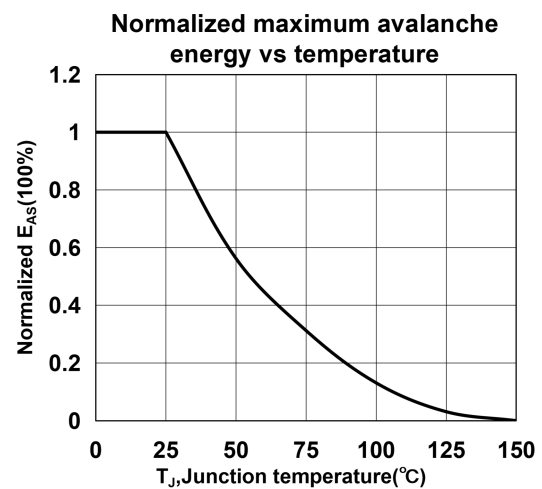
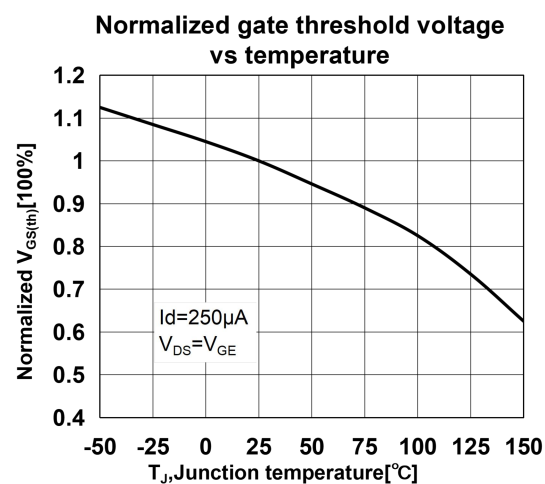
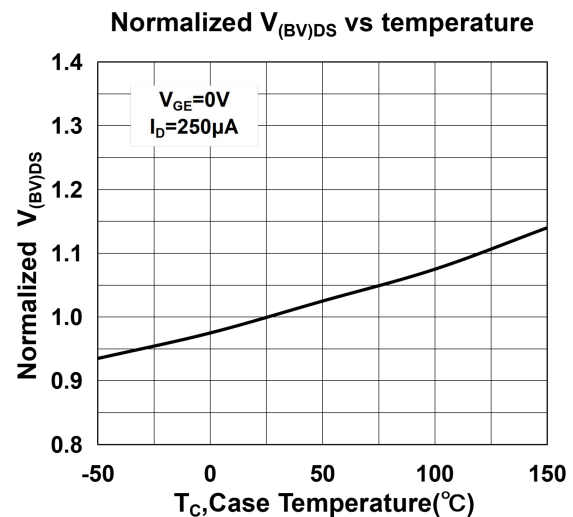
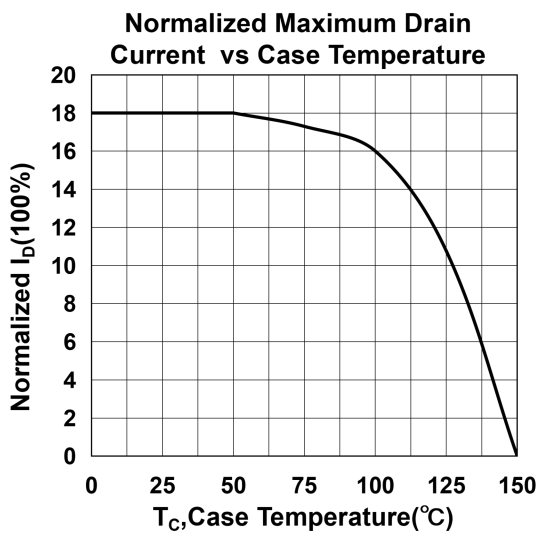
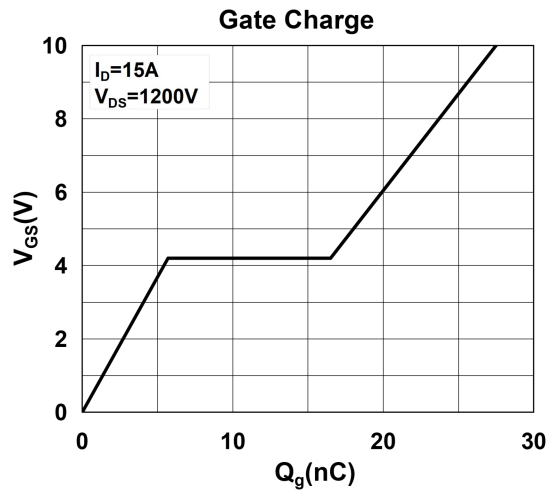
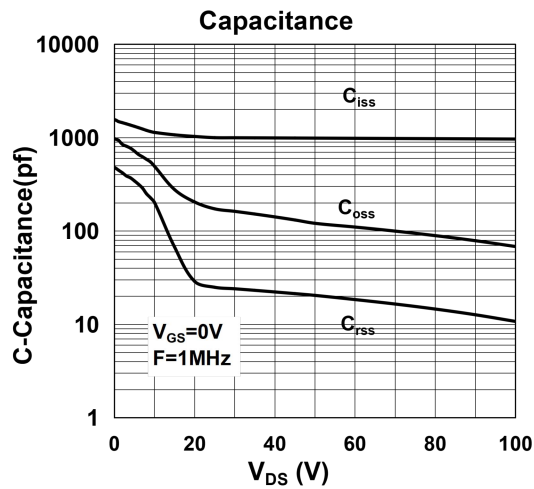
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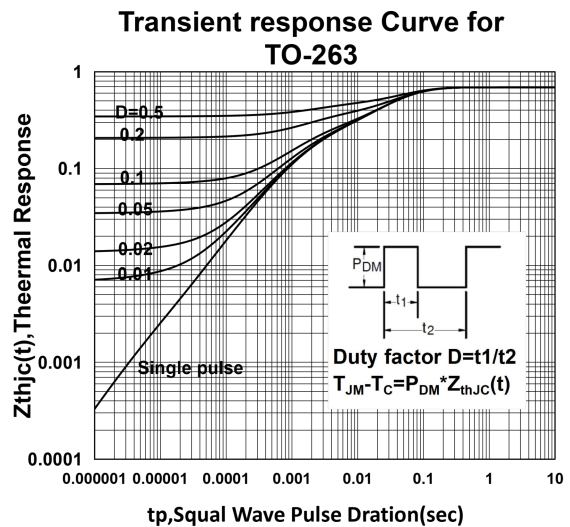
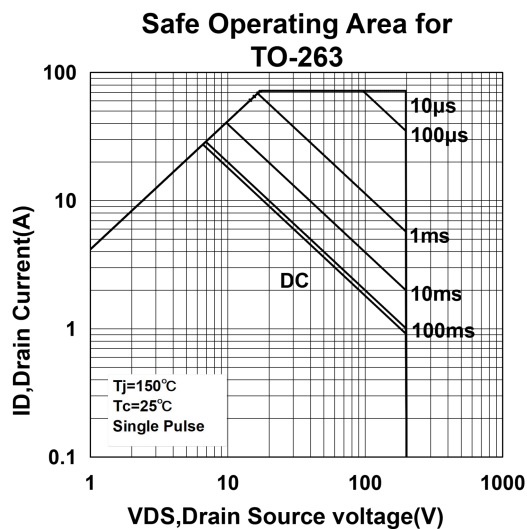
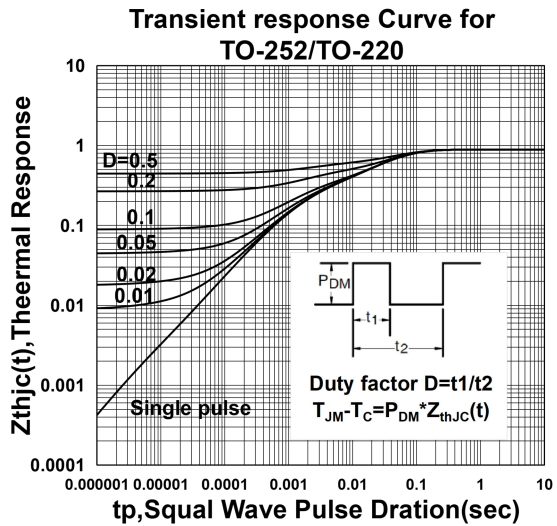
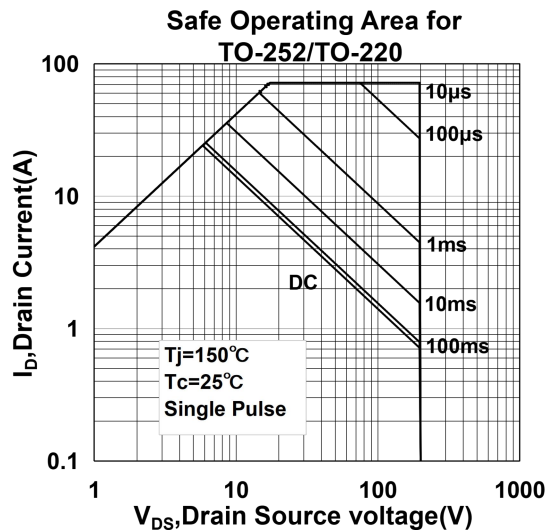
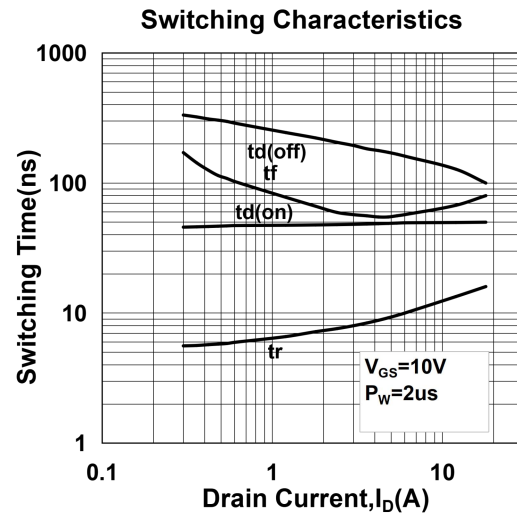
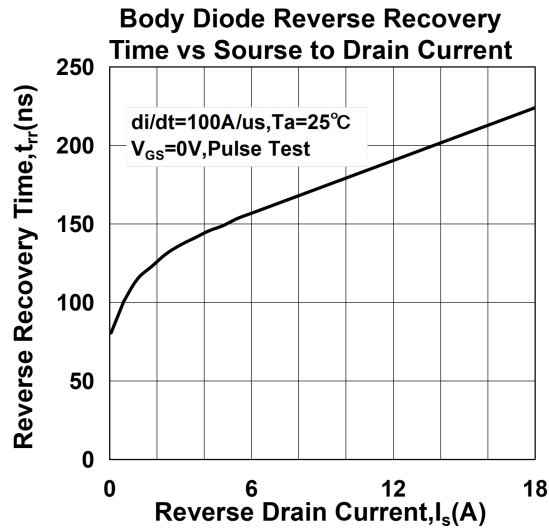
- 1:Pulse width limited by maximum junction temperature
- 2: $L=1.6mH, I_{AS}=18A, V_{DD}=50V, R_G=25\Omega$, Starting $T_J=25^{\circ}C$
- 3: $I_{SD}\leq 18A, di/dt\leq 200A/us, V_{DD}\leq BV_{DSS}$, Starting $T_J=25^{\circ}C$
- 4:Pulse Test:Pulse Width $\leq 300us$, Duty Cycle $\leq 2\%$
- 5:Essentially independent of operating temperature

Electrical Characteristics

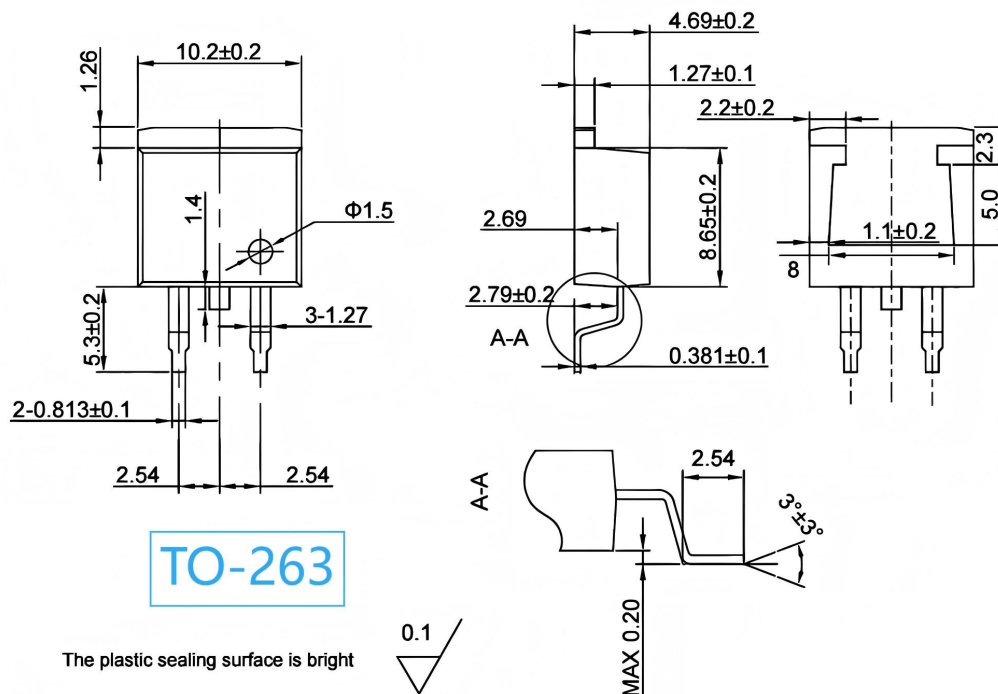
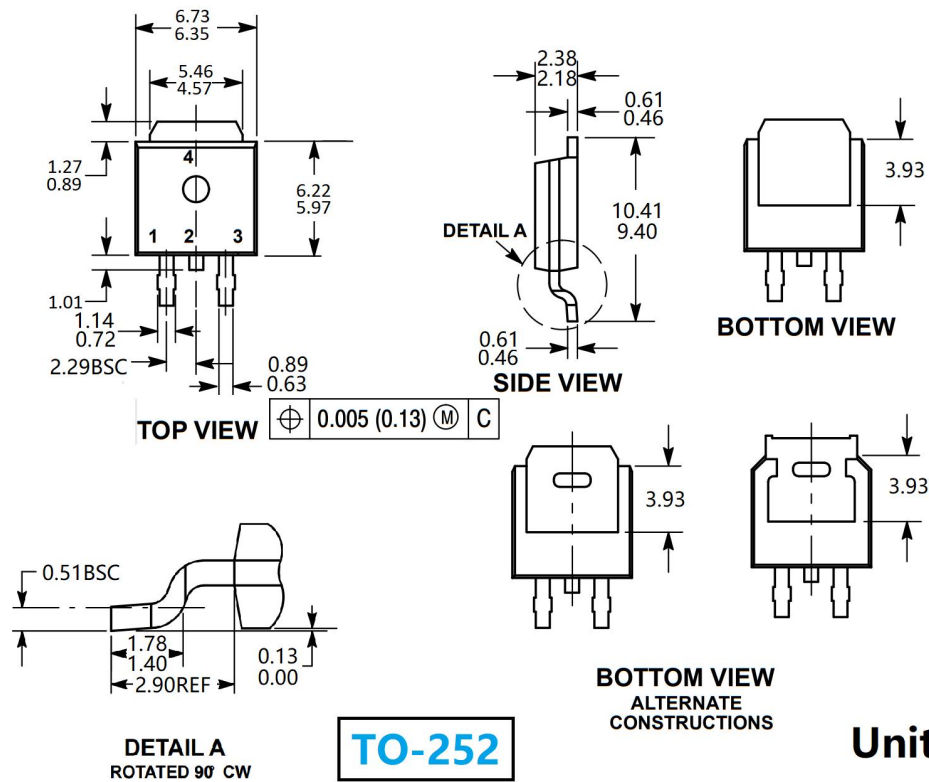






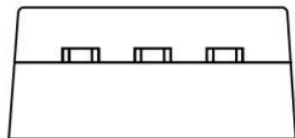
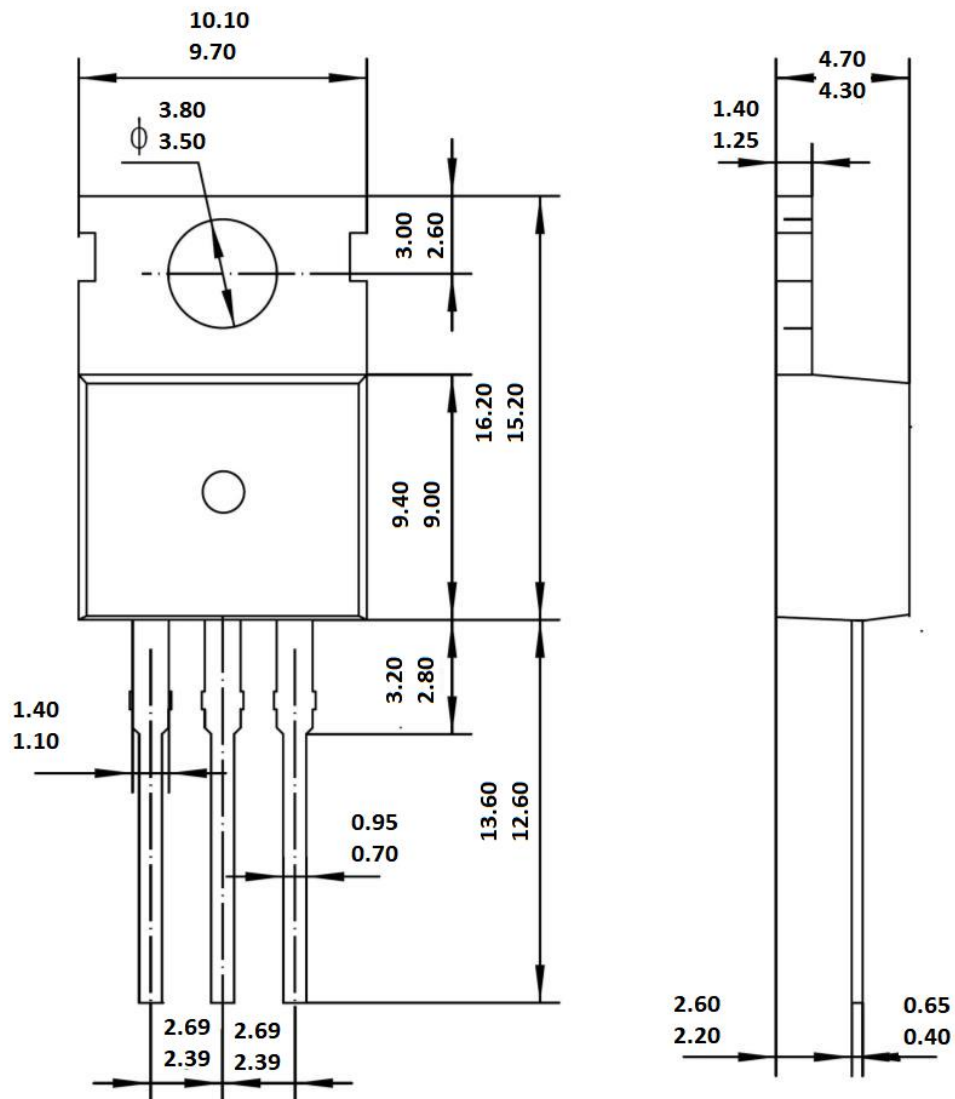


Package Mechanical DATA



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



TO-220

Unit: mm