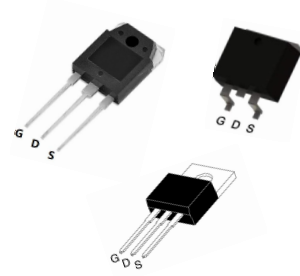


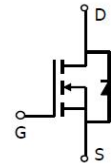
Features

- $V_{DS}=150V$
- $I_D=120A @V_{GS}=10V$
- Very low on-resistance $R_{DS(ON)}$
 $<7.2m\Omega @V_{GS}=10V$



Applications

Switching applications



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

Characteristics		Symbol	Rating	Unit
Drain-source Voltage		V_{DSS}	150	V
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	$^\circ C$

Thermal Characteristics

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

Ordering Information

Part Number	Temp. Range	Package	Packing	RoHS
MS120N15FT	-55~150 $^\circ C$	TO-220	Tube	Free
MS120N15FE	-55~150 $^\circ C$	TO-263	Tube	Free
MS120N15FB	-55~150 $^\circ C$	TO-3PB	Tube	Free

Electrical Characteristics(T_J=25°C)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250UA,V _{GS} =0V	150	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250uA	1.8	-	3.9	
Drain Cut-Off Current	I _{DSS}	V _{DS} =120V,V _{GS} =0V	-	-	1	uA
Gate Leakage Current	I _{GSS}	V _{GS} =±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 =3.0Ω	-	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

Electrical characteristics(Curves)

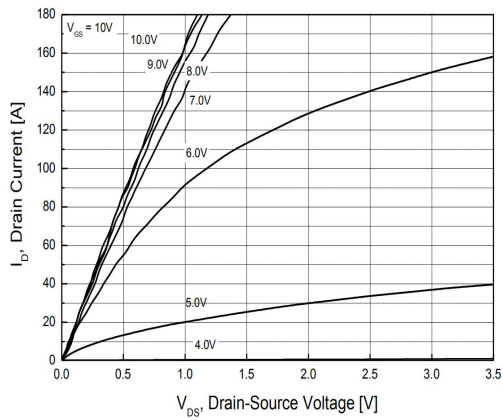


Fig.1 On-Region Characteristics

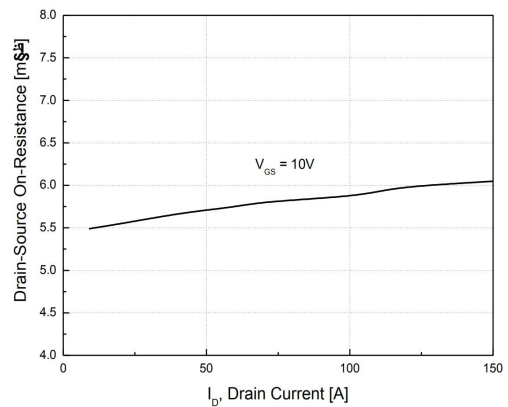


Fig.2 On-Resistance Variation with Drain Current and Gate Voltage

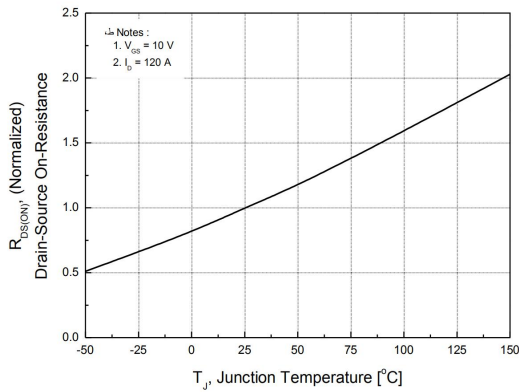


Fig.3 On-Resistance Variation with Temperature

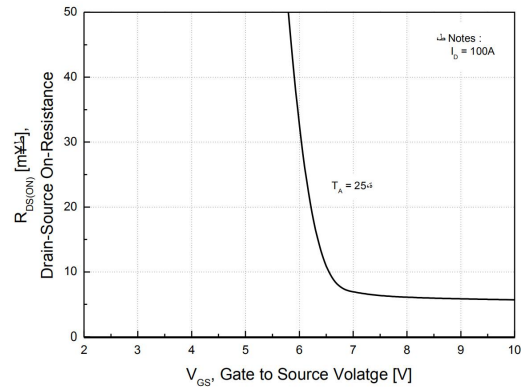


Fig.4 On-Resistance Variation with Gate to Source Voltage

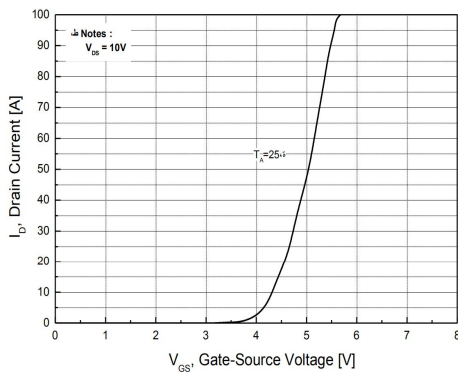


Fig.5 Transfer Characteristics

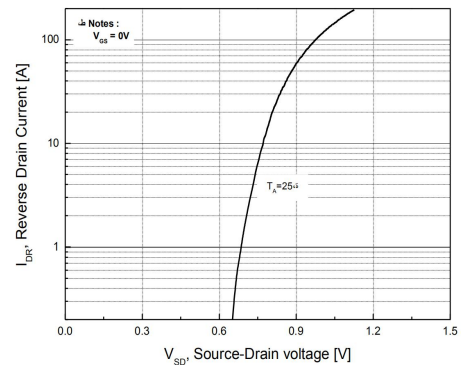


Fig.6 Body Diode Forward Voltage Variation with Source Current and Temperature

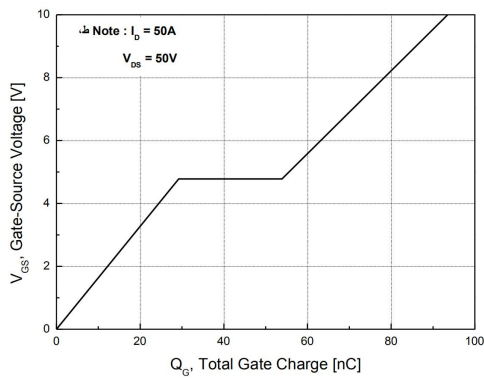


Fig.7 Gate Charge Characteristics

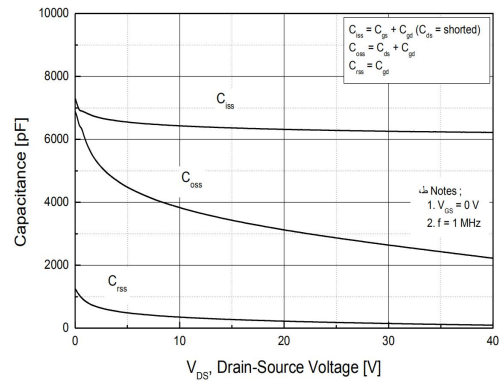


Fig.8 Capacitance Characteristics

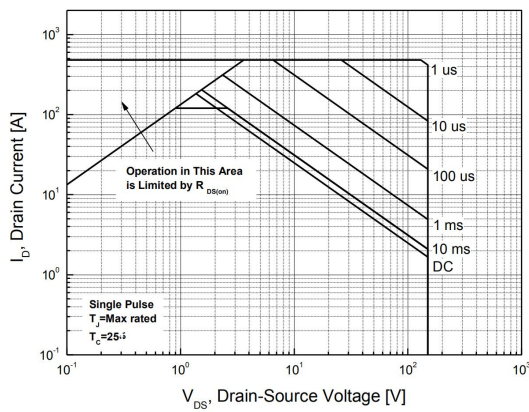


Fig.9 Maximum Safe Operating Area

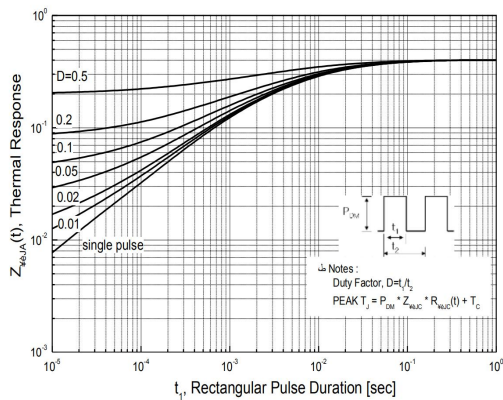
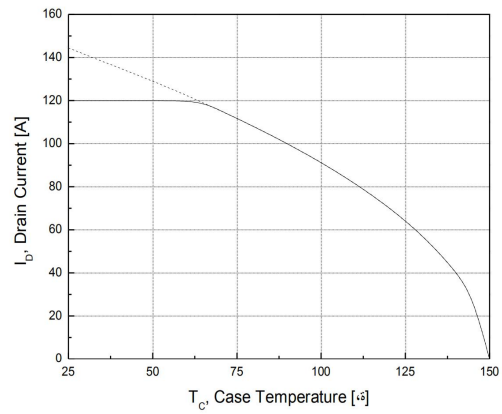
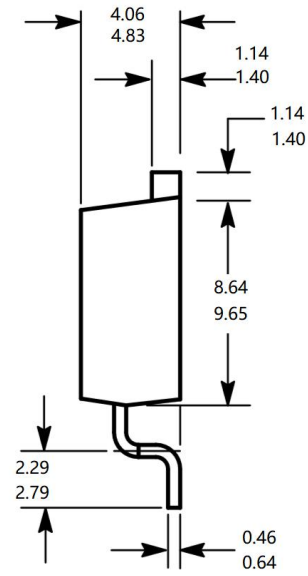
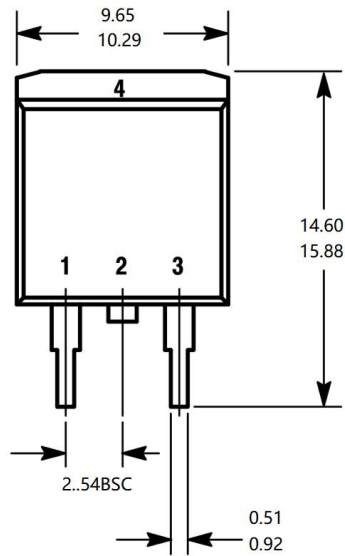


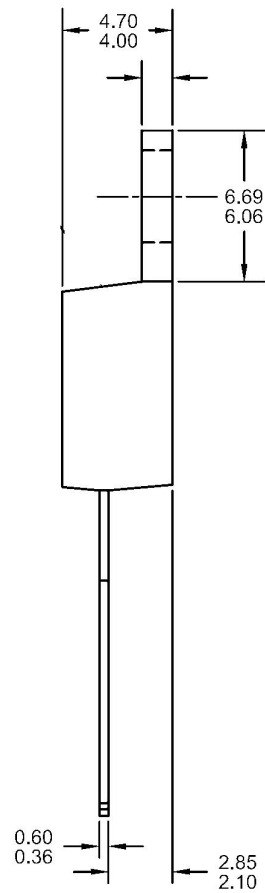
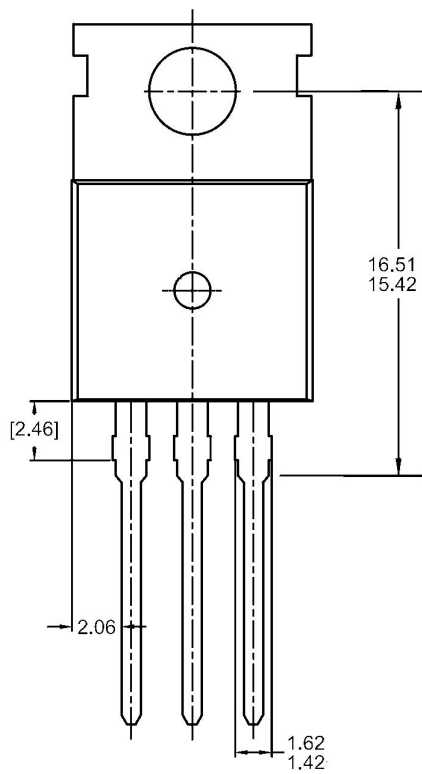
Fig.11 Transient Thermal Response Curve

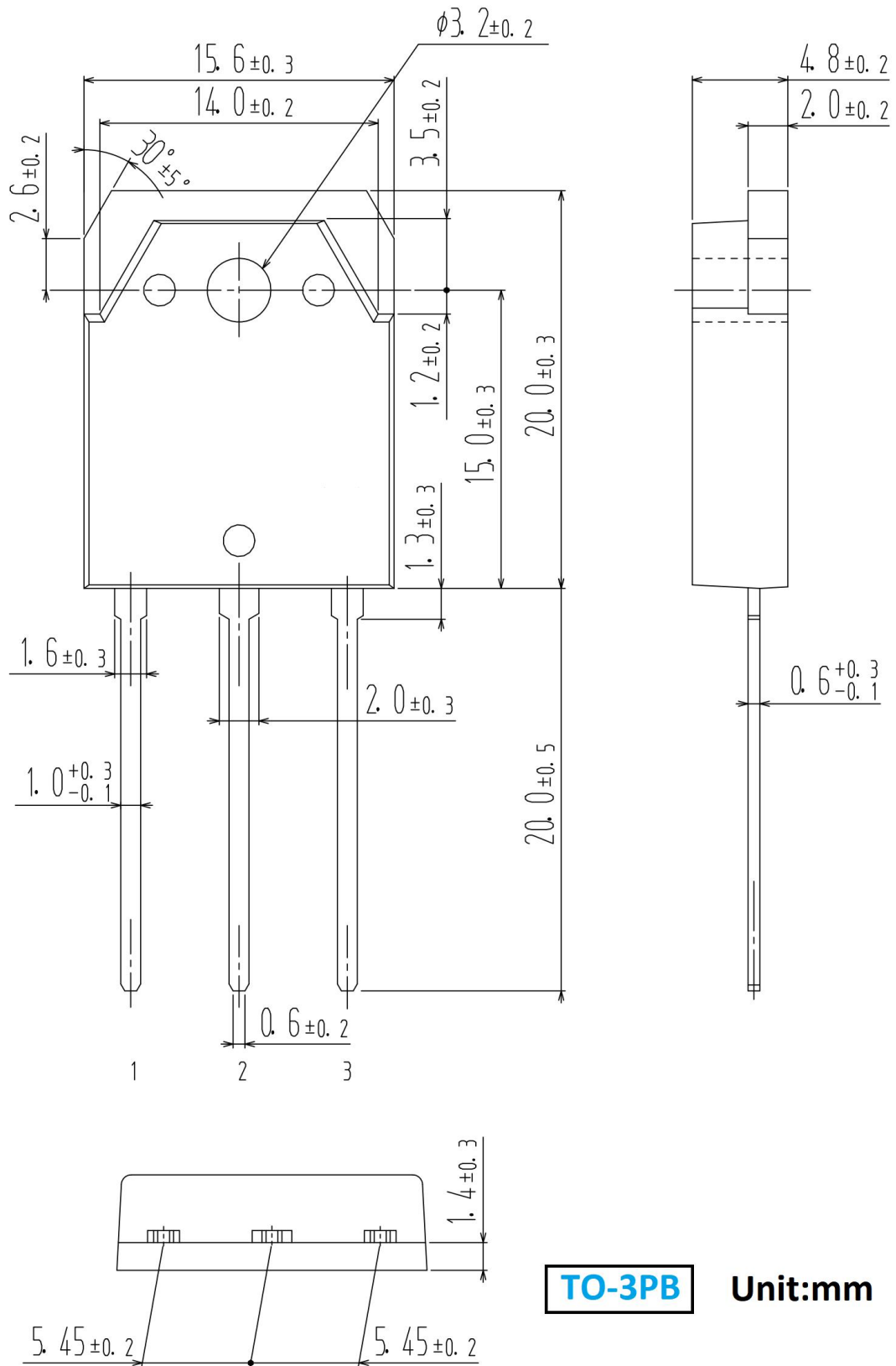
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TO-220





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