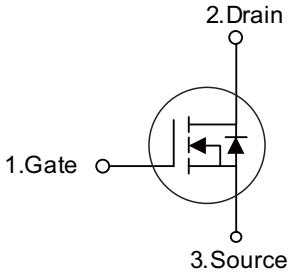
■ PRODUCT CHARACTERISTICS

VDSS	30V
R_{DS}(on)Typ(@V_{GS}=10 V)	2.5mΩ
R_{DS}(on)Typ(@V_{GS} =4.5 V)	3.5mΩ
ID	130A

Symbol



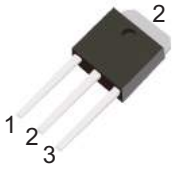
■ APPLICATIONS

Power switching circuit of adaptor and charge

■ FEATURES

Fast switching
Low ON fesistance
Low gate charge
Low reverse transfer capacitances

TO-252



TO-251

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT130N03D	TO-252	2500 pieces /Reel
N/A	MOT130N03C	TO-251	70 pieces/Tube

■ ABSOLITE MAXIMUM RATINGS (T_C =25℃, unless otherwise specified)

Parameter	Symbol	Rating	Units
Drain-to-Source Voltage	V_{DSS}	30	V
Continuous Drain Current T_C = 25 ℃	I_D	130	A
Continuous Drain Current T_C = 100 ℃（Package limited）	I_D	60	A
Pulsed Drain Current T_C = 25 ℃（Package limited）	I_{DM}	240	A
Gate-to-Source Voltage	V_{GS}	±20	V
Single Pulse Avalanche Energy	E_{AS}	540	mJ
Power Dissipation T_C = 25 ℃	P_D	83	W
Derating Factor above 25 ℃		0.666	W/℃
Operating Junction and Storage Temperature Range	T_J， T_{stg}	–55 to 150	℃

■ THERMAL DATA

Parameter	Symbol	Max.	Units
Junction-to-Case	$R_{\theta JC}$	1.5	℃/W
Junction-to-Ambient	$R_{\theta JA}$	100	℃/W

■ ELECTRICAL CHARACTERISTICS (T_J =25℃, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	V_{DSS}	V_{GS}=0V, I_D=250μA	30	-	-	V
Drain to Source Leakage Current	I_{DSS}	V_{DS} =30V, V_{GS}= 0V	-	-	1	μA
		V_{DS} =24V, V_{GS}= 0V, T_J = 125℃	-	-	100	μA
Gate to Source Forward Leakage	$I_{GSS(F)}$	V_{GS} =+20V	-	-	100	nA
Gate to Source Reverse Leakage	$I_{GSS(R)}$	V_{GS} =-20V	-	-	-100	nA
Drain-to-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=19A	-	2.5	3.5	mΩ
		V_{GS}=4.5V,I_D=19A	-	3.5	4.8	mΩ
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS} = V_{GS}, I_D = 250μA	1.0	-	3.0	V
Dynamic Characteristics						
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz	-	2.3	-	Ω
Input Capacitance	C_{iss}	V_{GS}=0V， V_{DS}=15V f=1.0MHz	-	2400	-	pF
Output Capacitance	C_{oss}		-	380	-	
Reverse Transfer Capacitance	C_{rss}		-	350	-	
Resistive Switching Characteristics						
Turn-on Delay Time	$t_{d(ON)}$	V_{GS}=10V， R_G=6Ω V_{DD}=15V， I_D=50A	-	14.8	-	ns
Rise Time	tr		-	15.2	-	
Turn-Off Delay Time	$t_{d(OFF)}$		-	119.6	-	
Fall Time	t_f		-	59.2	-	
Total Gate Charge	Q_g	V_{GS}=10V， V_{DD}=15V I_D=50A	-	79.1	-	nC
Gate to Source Charge	Q_{gs}		-	13.6	-	
Gate to Drain (“Miller”)Charge	Q_{gd}		-	16.0	-	
Source-Drain Diode Characteristics						
Continuous Source Current (Body Diode)	I_S		-	-	60	A
Maximum Pulsed Current (Body Diode)	I_{SM}		-	-	240	A
Diode Forward Voltage	V_{SD}	I_S=50A,V_{GS}=0V	-	-	1.2	V
Reverse Recovery Time	trr	I_S=50A,T_j = 25℃ dI$_F$/dt=100A/us,	-	44.4	-	ns
Reverse Recovery Charge	Qrr		-	34.6	-	nC
Reverse Recovery Current	I_{RRM}		-	1.6	-	A

■ TEST CIRCUIT AND WAVEFORM

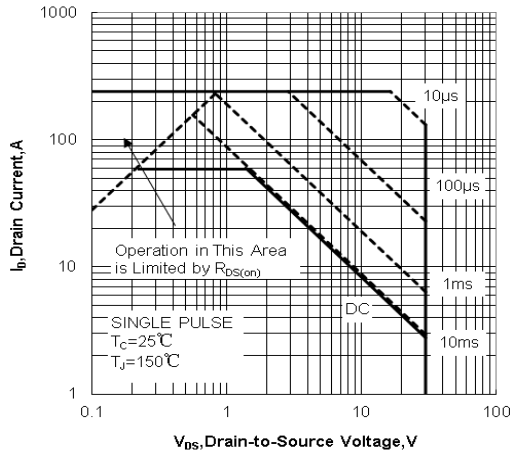


Figure1. Maximum Forward Bias Safe Operating Area

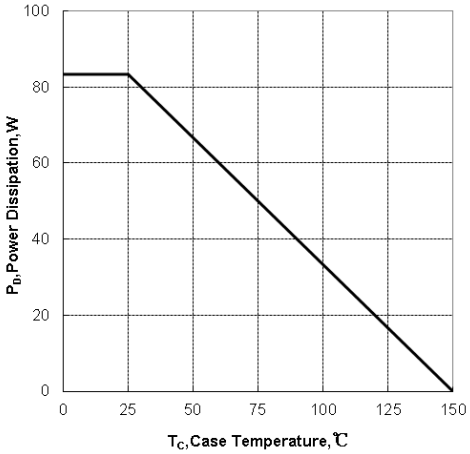


Figure2. Maximum Power Dissipation vs Case Temperature

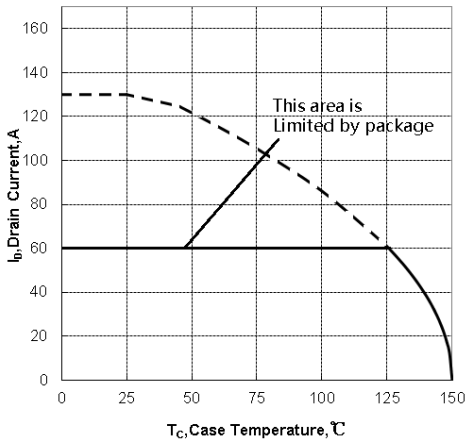


Figure3. Maximum Continuous Drain Current vs Case Temperature

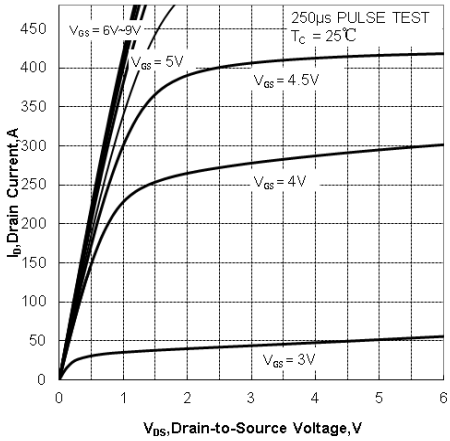


Figure 4. Typical Output Characteristics

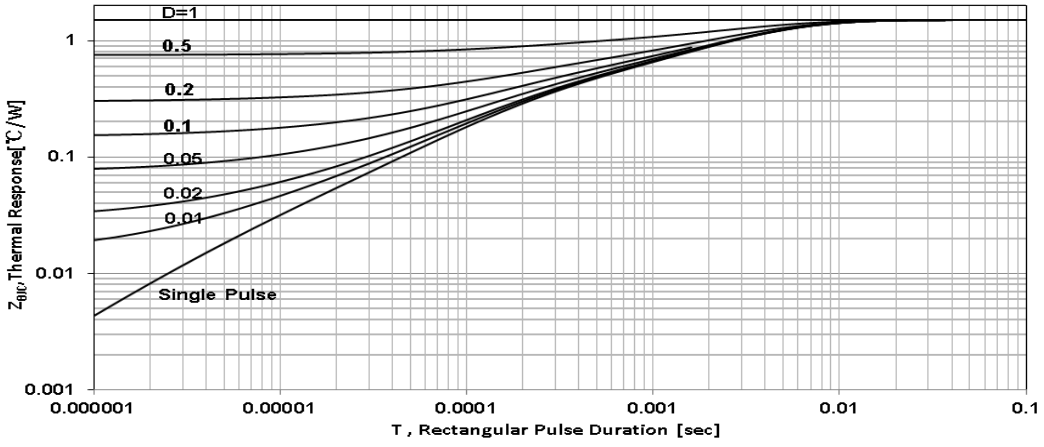


Figure5. Maximum Effective Transient Thermal Impedance, Junction-to-Case

■ TYPICAL CHARACTERISTICS

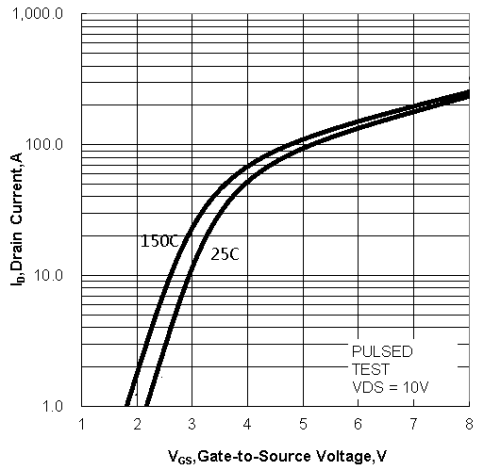


Figure 6. Typical Transfer Characteristics

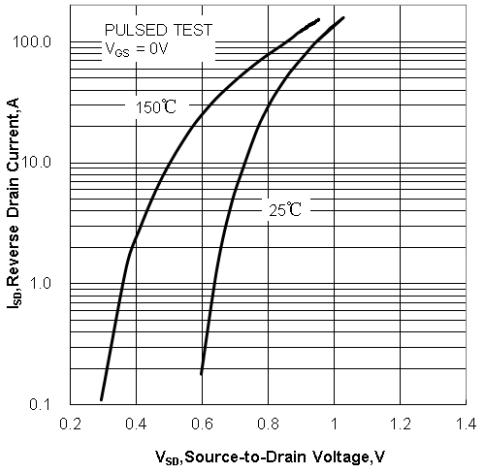


Figure 7. Typical Body Diode Transfer Characteristics

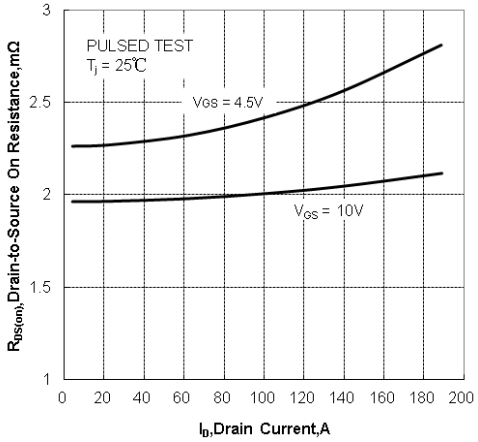


Figure 8. Drain-to-Source On Resistance vs Drain Current

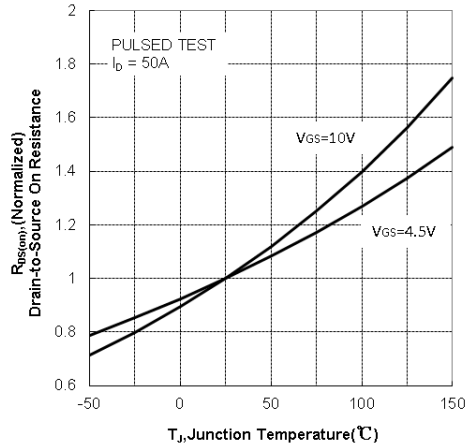


Figure 9. Nomalized on Resistance vs Junction Temperature

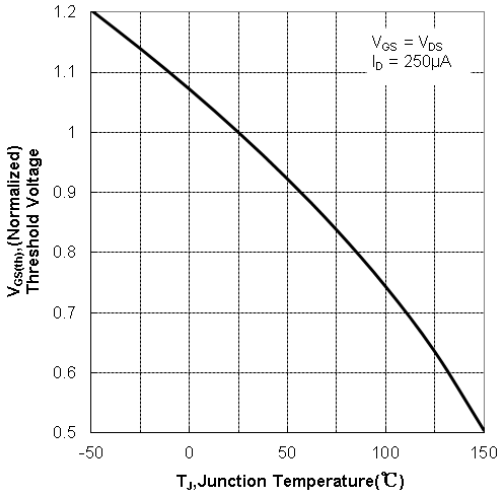


Figure 10. Nomalized Theshold Voltage vs Junction Temperature

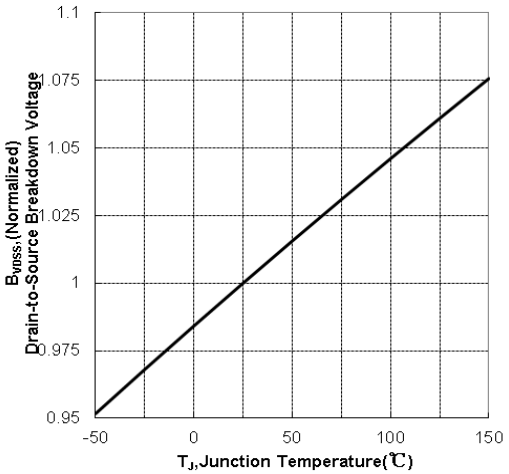
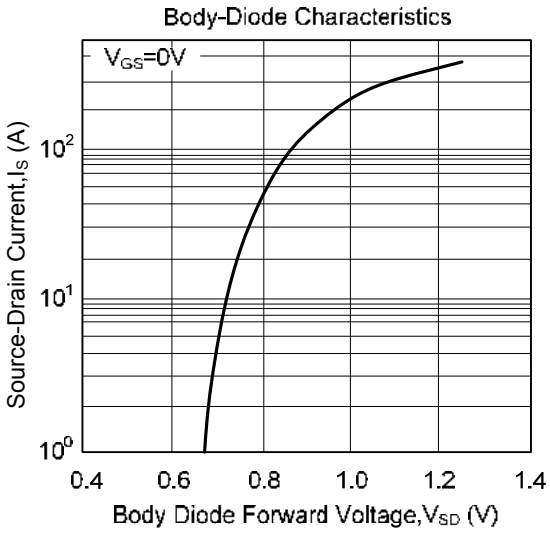
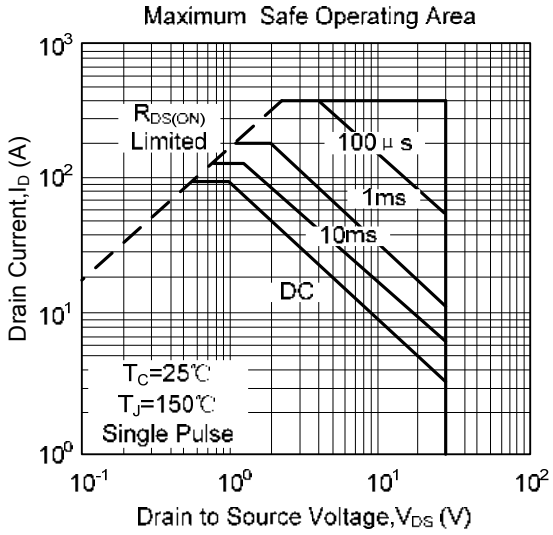
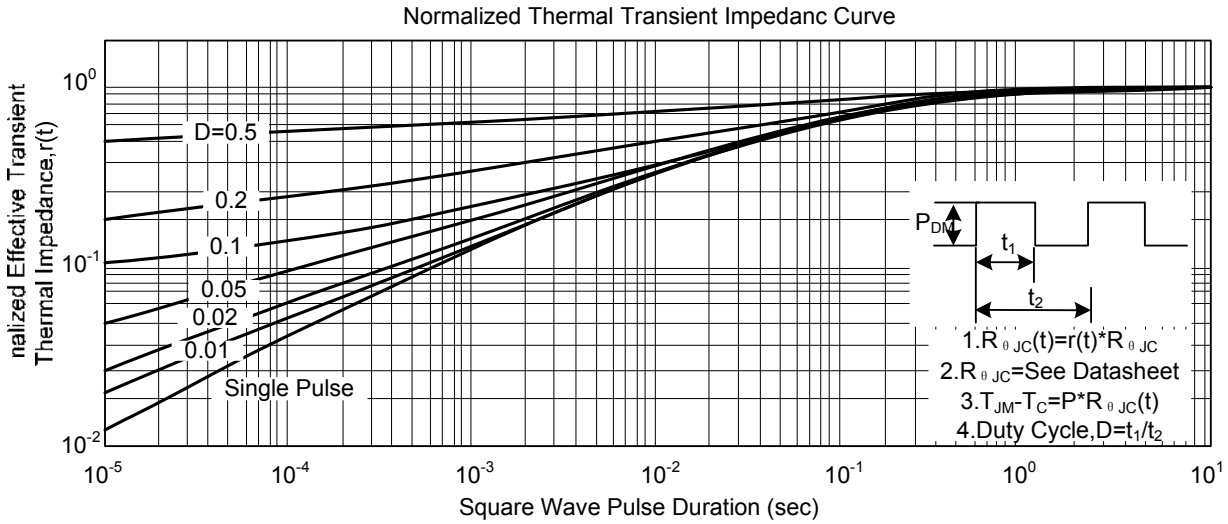


Figure 11. Nomalized Breakdown Voltage vs Junction Temperature

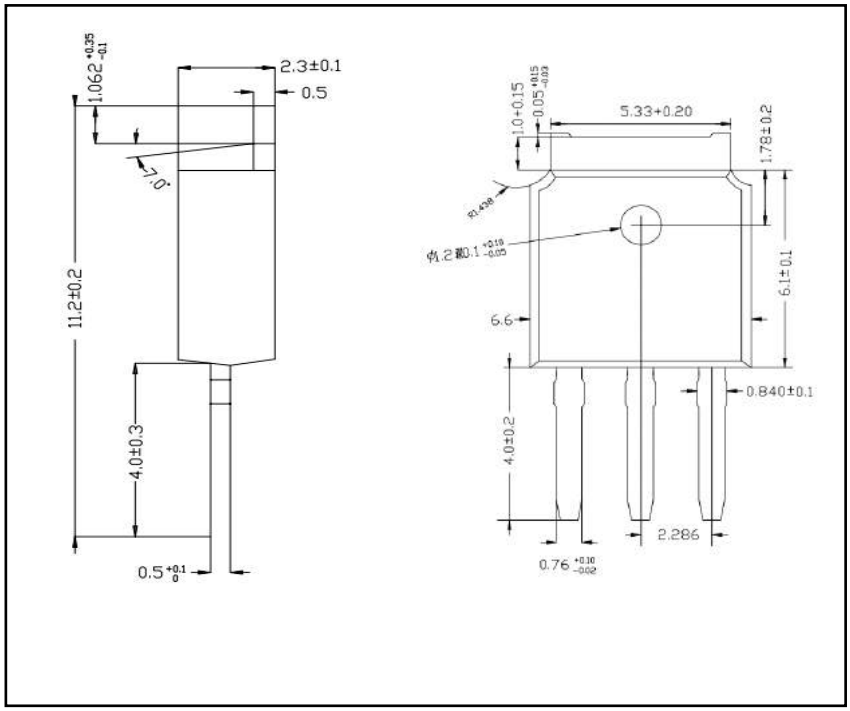
■ TYPICAL CHARACTERISTICS(Cont.)



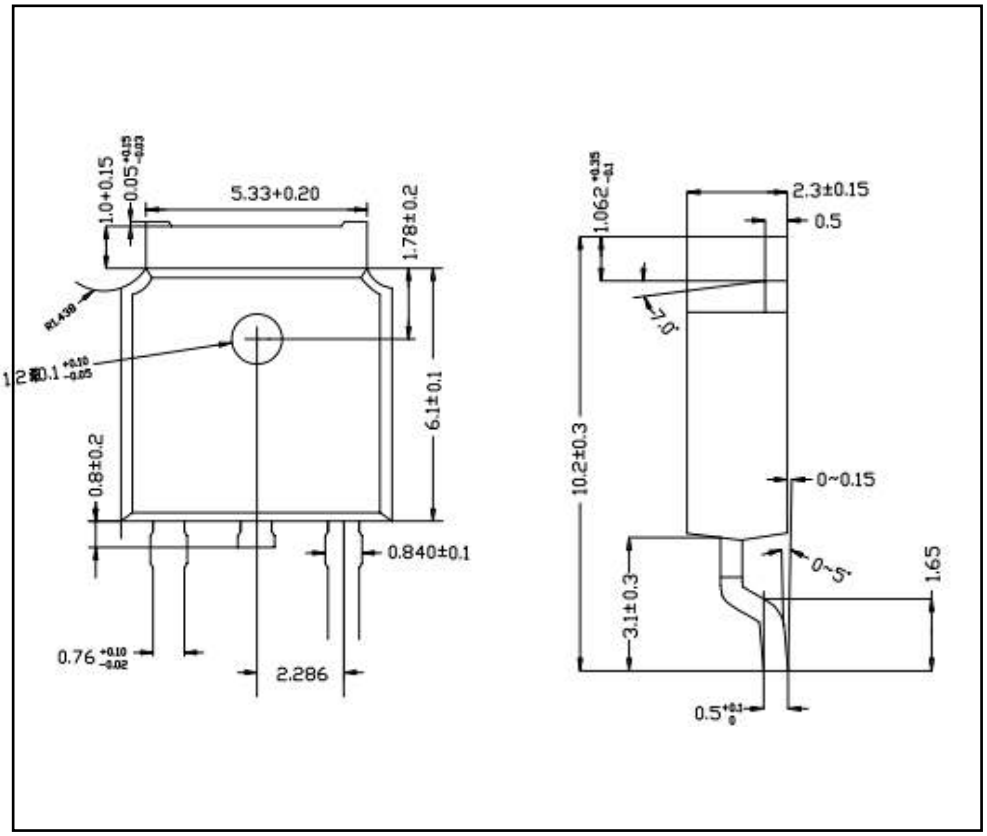




■ TO-251 PACKAGE OUTLINE DIMENSIONS



■ TO-252 PACKAGE OUTLINE DIMENSIONS



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