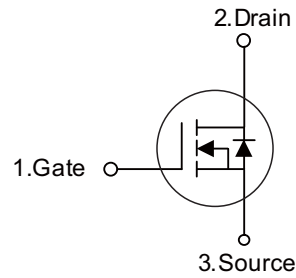


■ PRODUCT CHARACTERISTICS

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

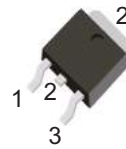


■ APPLICATIONS

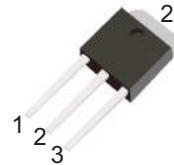
Power switching circuit of adaptor and charge

■ FEATURES

- Fast switching
- Low ON resistance
- 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

■ ABSOLUTE MAXIMUM RATINGS (T_C = 25°C, unless otherwise specified)

Parameter	Symbol	Rating	Units
Drain-to-Source Voltage	V _{DSS}	30	V
Continuous Drain Current T _C = 25 °C	I _D	130	A
Continuous Drain Current T _C = 100 °C (Package limited)	I _D	60	A
Pulsed Drain Current T _C = 25 °C (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 °C	P _D	83	W
Derating Factor above 25 °C		0.666	W/°C
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 150	°C

■ THERMAL DATA

Parameter	Symbol	Max.	Units
Junction-to-Case	R _{θJC}	1.5	°C/W
Junction-to-Ambient	R _{θJA}	100	°C/W

■ ELECTRICAL CHARACTERISTICS ($T_j = 25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	V_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Drain to Source Leakage Current	I_{DSS}	$V_{DS} = -30V, V_{GS} = 0V$	-	-	1	μA
		$V_{DS} = 24V, V_{GS} = 0V, T_j = 125^\circ\text{C}$	-	-	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	m Ω
		$V_{GS}=4.5V, I_D=19A$	-	3.5	4.8	m Ω
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	-	3.0	V
Dynamic Characteristics						
Gate resistance	R_g	$V_{GS}=0V, V_{DS}=0V, f=1\text{MHz}$	-	2.3	-	Ω
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=15V$ $f=1.0\text{MHz}$	-	2400	-	pF
Output Capacitance	C_{oss}		-	380	-	
Reverse Transfer Capacitance	C_{rss}		-	350	-	
Resistive Switching Characteristics						
Turn-on Delay Time	$t_{d(ON)}$	$V_{GS}=10V, R_G=6\Omega$ $V_{DD}=15V, I_D=50A$	-	14.8	-	ns
Rise Time	t_r		-	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	t_{rr}	$I_S=50A, T_j = 25^\circ\text{C}$ $dI_F/dt=100A/\mu s,$	-	44.4	-	ns
Reverse Recovery Charge	Q_{rr}		-	34.6	-	nC
Reverse Recovery Current	I_{RRM}		-	1.6	-	A

■ TEST CIRCUIT AND WAVEFORM

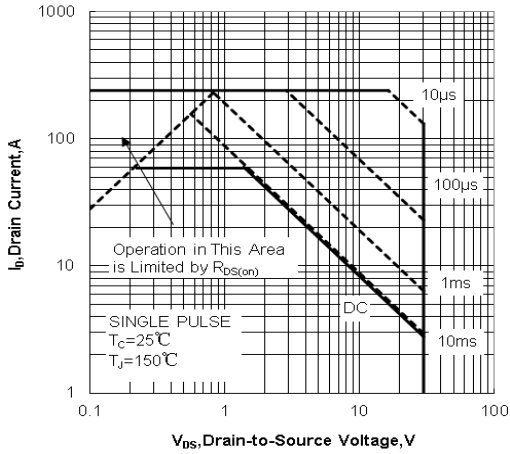


Figure1. Maximum Forward Bias Safe Operating Area

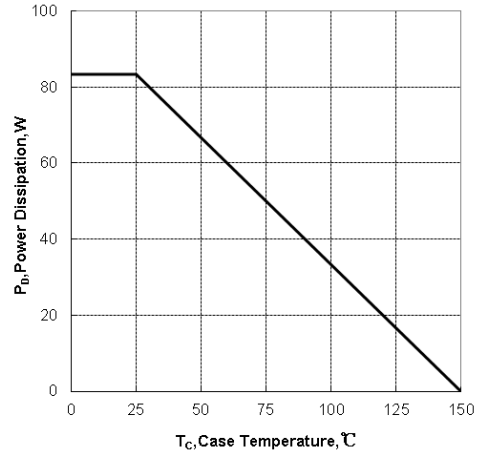


Figure2. Maximum Power Dissipation vs Case Temperature

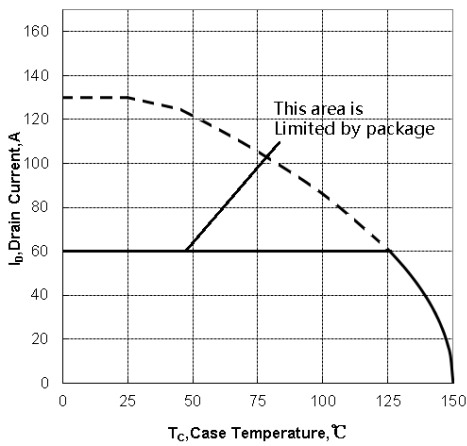


Figure3. Maximum Continuous Drain Current vs Case Temperature

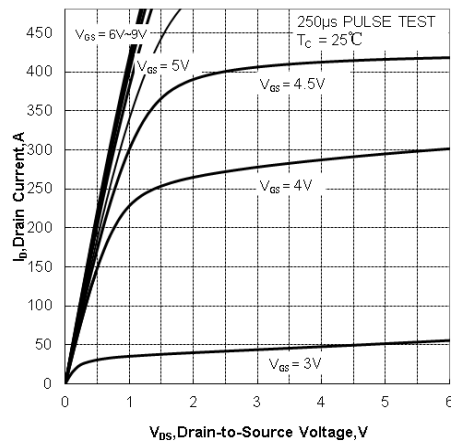


Figure 4. Typical Output Characteristics

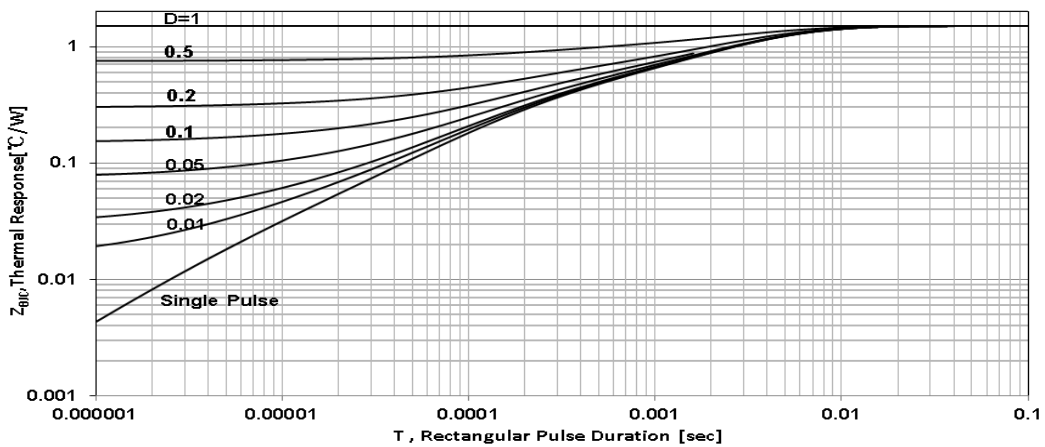


Figure5. Maximum Effective Transient Thermal Impedance, Junction-to-Case

■ TYPICAL CHARACTERISTICS

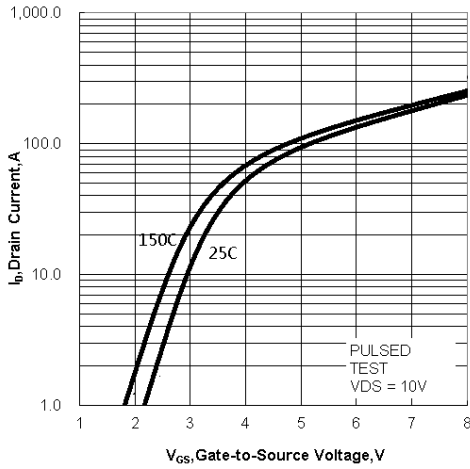


Figure 6. Typical Transfer Characteristics

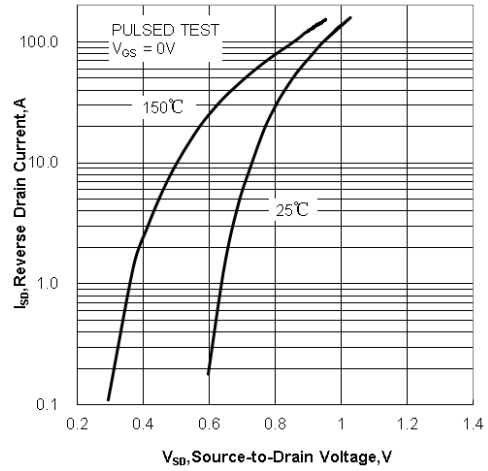


Figure 7. Typical Body Diode Transfer Characteristics

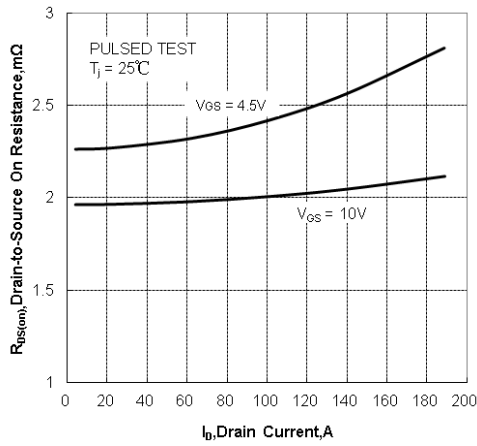


Figure 8. Drain-to-Source On Resistance vs Drain Current

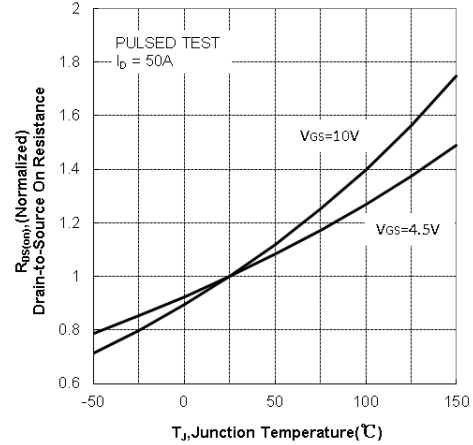


Figure 9. Normalized on Resistance vs Junction Temperature

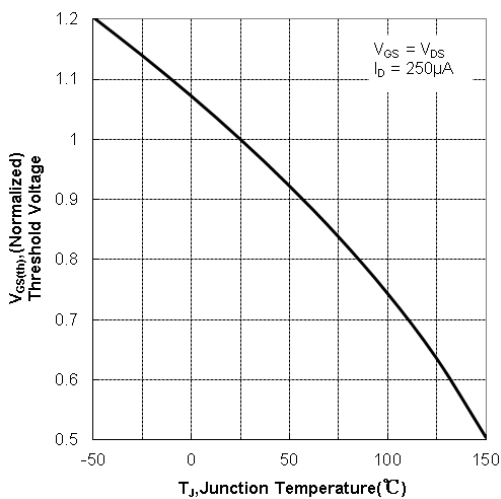


Figure 10. Normalized Threshold Voltage vs Junction Temperature

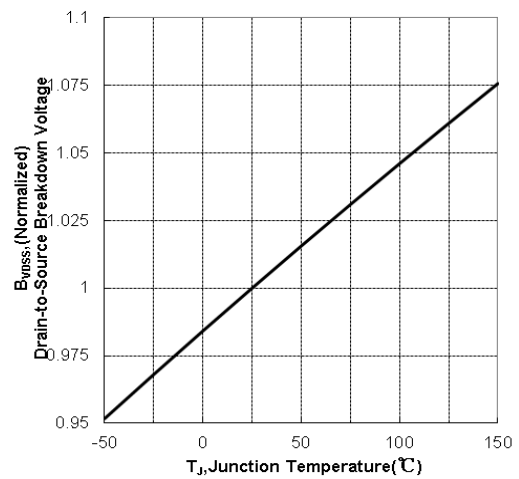
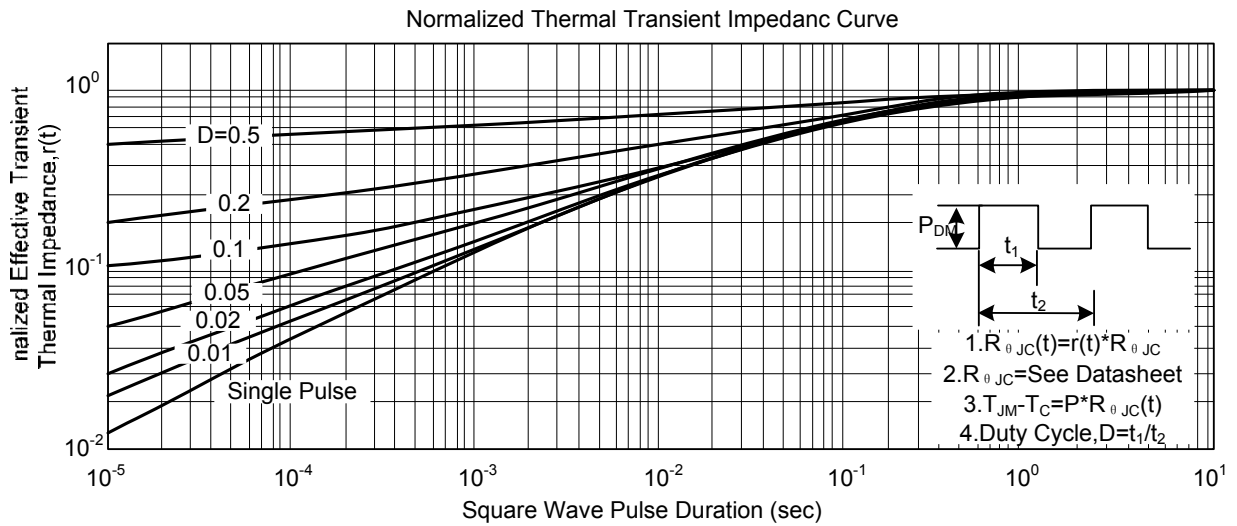
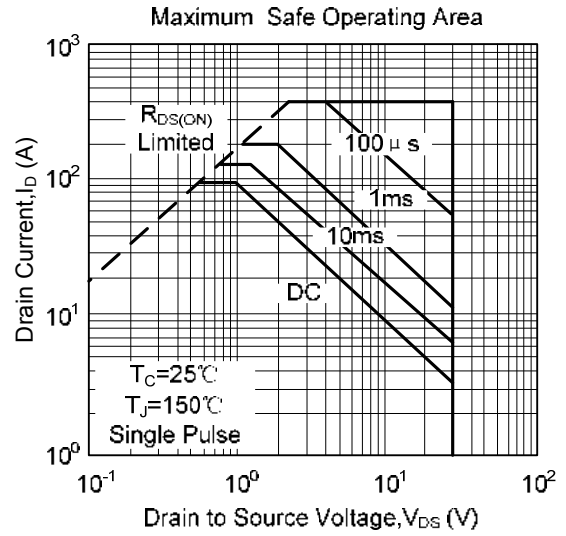
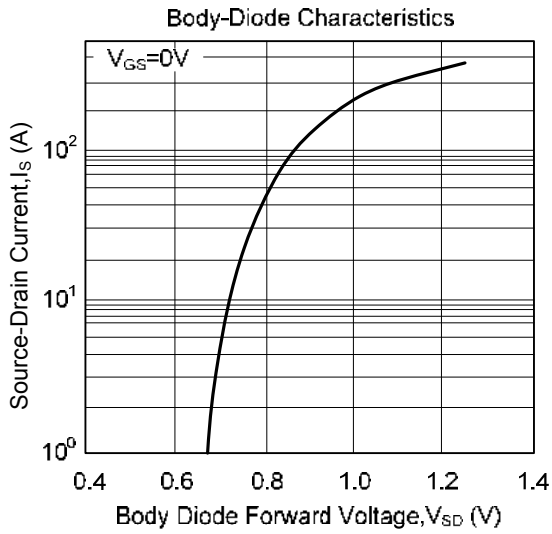
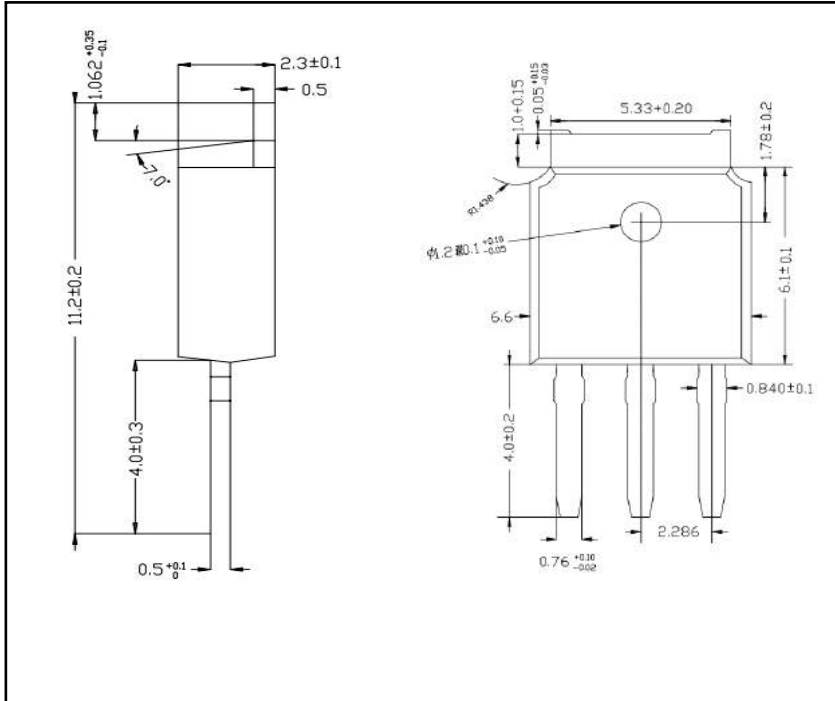


Figure 11. Normalized Breakdown Voltage vs Junction Temperature

■ TYPICAL CHARACTERISTICS(Cont.)



■ TO-251 PACKAGE OUTLINE DIMENSIONS



■ TO-252 PACKAGE OUTLINE DIMENSIONS

