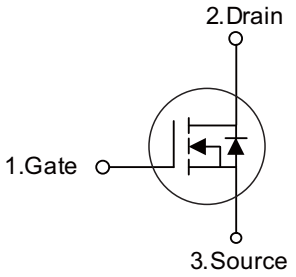
■ PRODUCT CHARACTERISTICS

VDSS	30V
R_{DS}(on)typ(@V_{GS}=10 V)	5.5mΩ
R_{DS} (on)typ(@V_{GS}=4.5 V)	8mΩ
ID	70A

Symbol



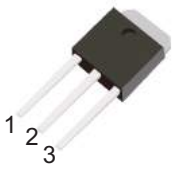
■ APPLICATIONS

* Switching applications

■ FEATURES

* Low Gate Charge
* Simple Drive Requirement
* Fast Switching
* RoHS Compliant
* Pb Free Plating Product

TO-252



TO-251

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT70N03D	TO-252	2500 pieces /Reel
N/A	MOT70N03C	TO-251	70 pieces/Tube

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V_{GS}=10V	I_D	70	A
Pulsed Drain Current **(Note 1)**	I_{DM}	195	A
Total Power Dissipation	P_D	53	W
Linear Derating Factor	P_D	0.36	W/°C
Storage Temperature Range	T_{STG}	-55 to 175	W/°C
Operating Junction Temperature Range	T_J	-55 to 175	W/°C

■ THERMAL DATA

Parameter	Symbol	Rating	Units
Thermal Resistance Junction-Case	$R_{\theta JC}$	2.8	°C/W
Thermal Resistance Junction- Ambient	$R_{\theta JA}$	110	°C/W

■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise noted)

Symbol	Parameter	Test Conditions	Limits			Unit
			Min.	Typ.		
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	30	-	-	V
$\triangle BV_{DSS}/\triangle T_J$	Breakdown Voltage Temperature Coefficient	Reference to 25ºC, I_D=1mA	-	0.032	-	V/ºC
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V, I_D=33A	-	5.5	6.6	mΩ
		V_{GS}=4.5V, I_D=20A	-	8	11.5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250uA	1	-	3	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=33A	-	35	-	S
I_{DSS}	Drain-Source Leakage Current(T_J=25ºC)	V_{DS}=30V, V_{GS}=0V	-	-	1	uA
	Drain-Source Leakage Current(T_J=175ºC)	V_{DS}=24V, V_{GS}=0V	-	-	250	
I_{GSS}	Gate Source Leakage	V_{GS}=±20V	-	-	±100	nA
Q_g	Total Gate Charge **(Note 2)**	I_D=33A V_{DS}=20V V_{GS}=4.5V	-	16.5	-	nC
Q_{gs}	Gate-Source Charge		-	5	-	
Q_{gd}	Gate-Drain (“Miller”) Charge		-	10.3	-	
$t_{d(on)}$	Turn-On Delay Time **(Note 2)**	V_{DS}=15V I_D=33A R_G=3.3Ω, V_{GS}=10V R_D=0.45Ω	-	8.2	-	nS
t_r	Rise Time		-	105	-	
$t_{d(off)}$	Turn-Off Delay Time		-	21.4	-	
t_f	Fall-Time		-	8.5	-	
C_{iss}	Input Capacitance	V_{GS}=0V V_{DS}=25V, f=1.0MHz	-	1485	-	pF
C_{oss}	Output Capacitance		-	245	-	
C_{rss}	Reverse Transfer Capacitance		-	170	-	
I_S	Continuous Source Current (Body Diode)	V_D=V_G=0V, V_S=1.3V	-	-	60	A
I_{SM}	Pulsed Source Current (Body Diode) **(Note 1)**		-	-	195	A
V_{SD}	Forward On Voltage **(Note 2)**	T_J=25ºC, I_S=60A, V_{GS}=0V	-	-	1.3	V

■ TYPICAL CHARACTERISTICS

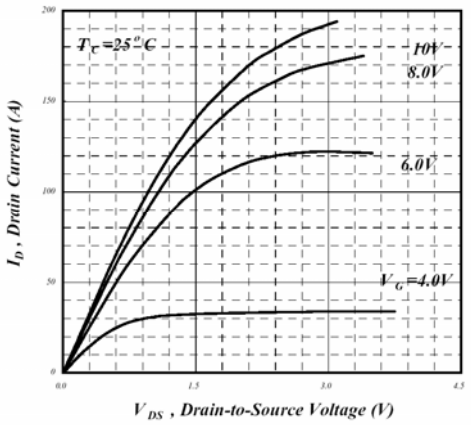


Fig 1. Typical Output Characteristics

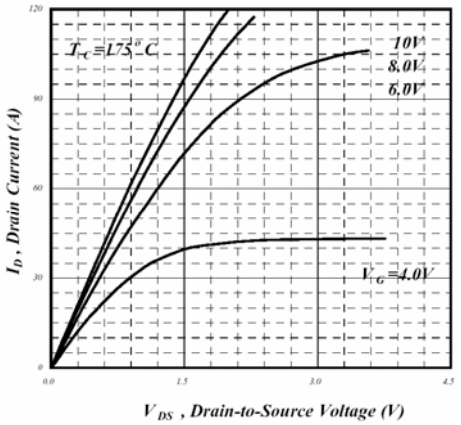


Fig 2. Typical Output Characteristics

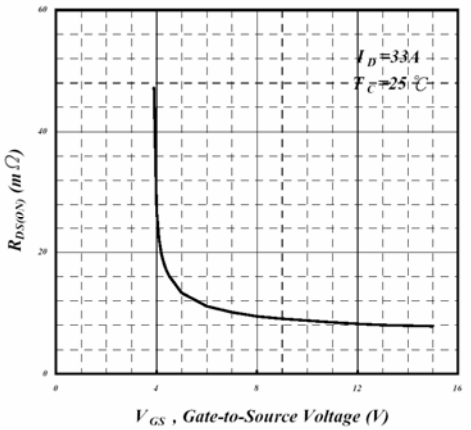


Fig 3. On-Resistance v.s. Gate Voltage

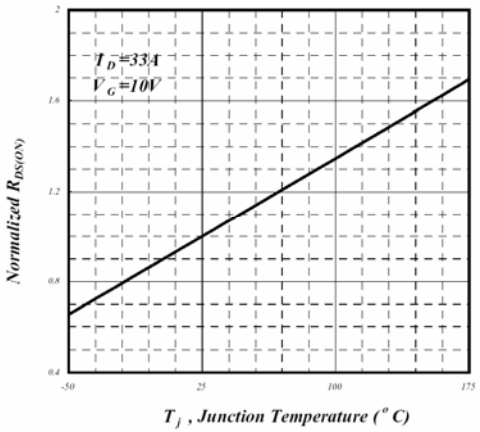


Fig 4. Normalized On-Resistance v.s. Junction Temperature

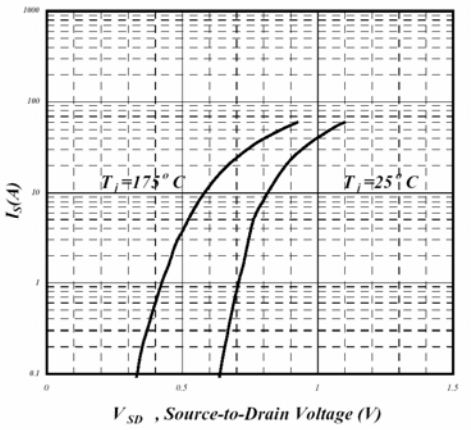


Fig 5. Forward Characteristic of Reverse Diode

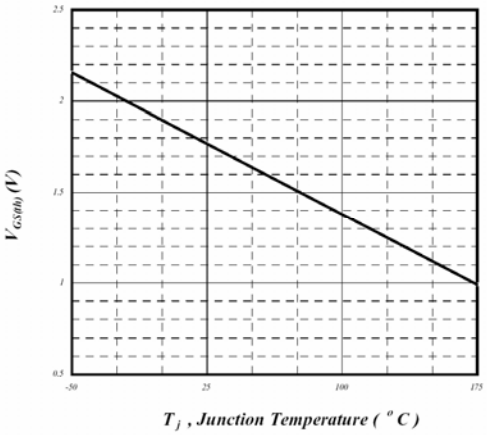


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

■ TYPICAL CHARACTERISTICS(Cont.)

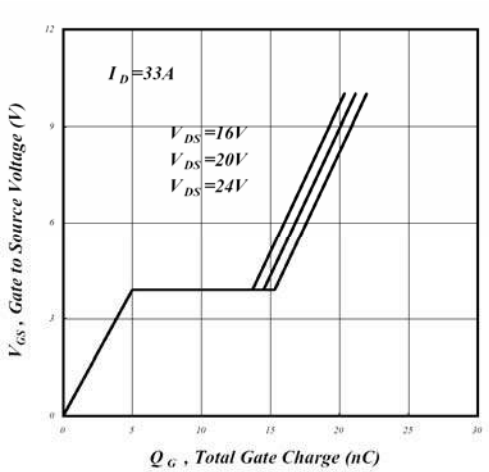


Fig 9. Gate Charge Characteristics

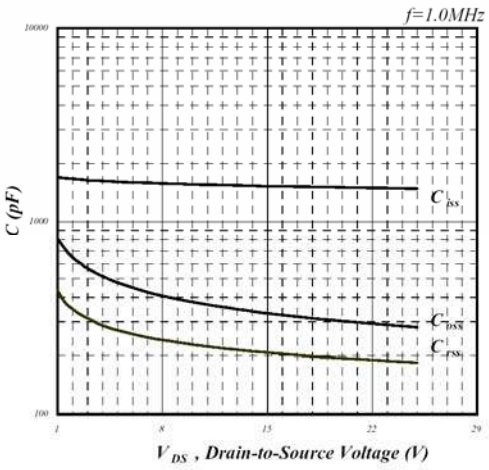


Fig 10. Typical Capacitance Characteristics

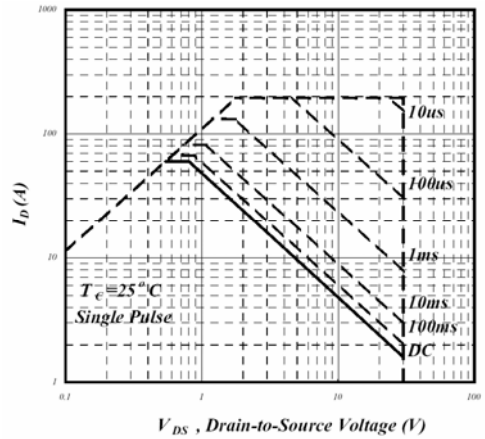


Fig 7. Maximum Safe Operating Area

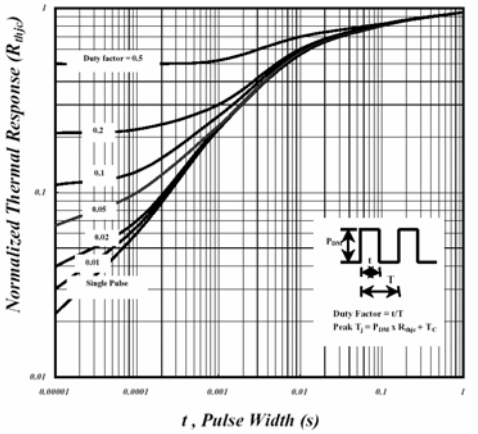


Fig 8. Effective Transient Thermal Impedance

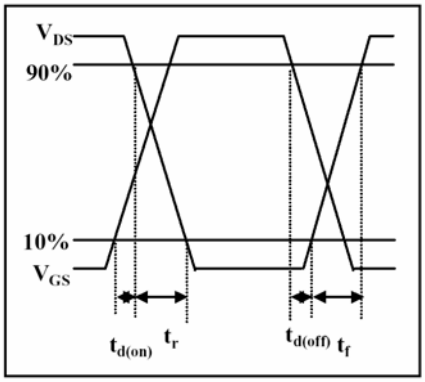


Fig 11. Switching Time Waveform

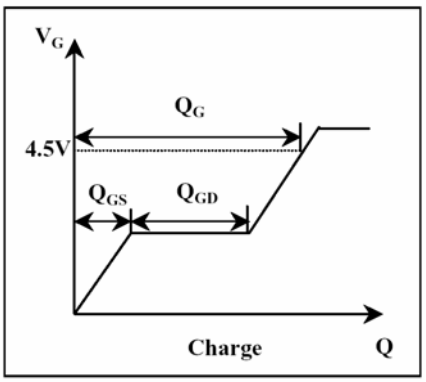
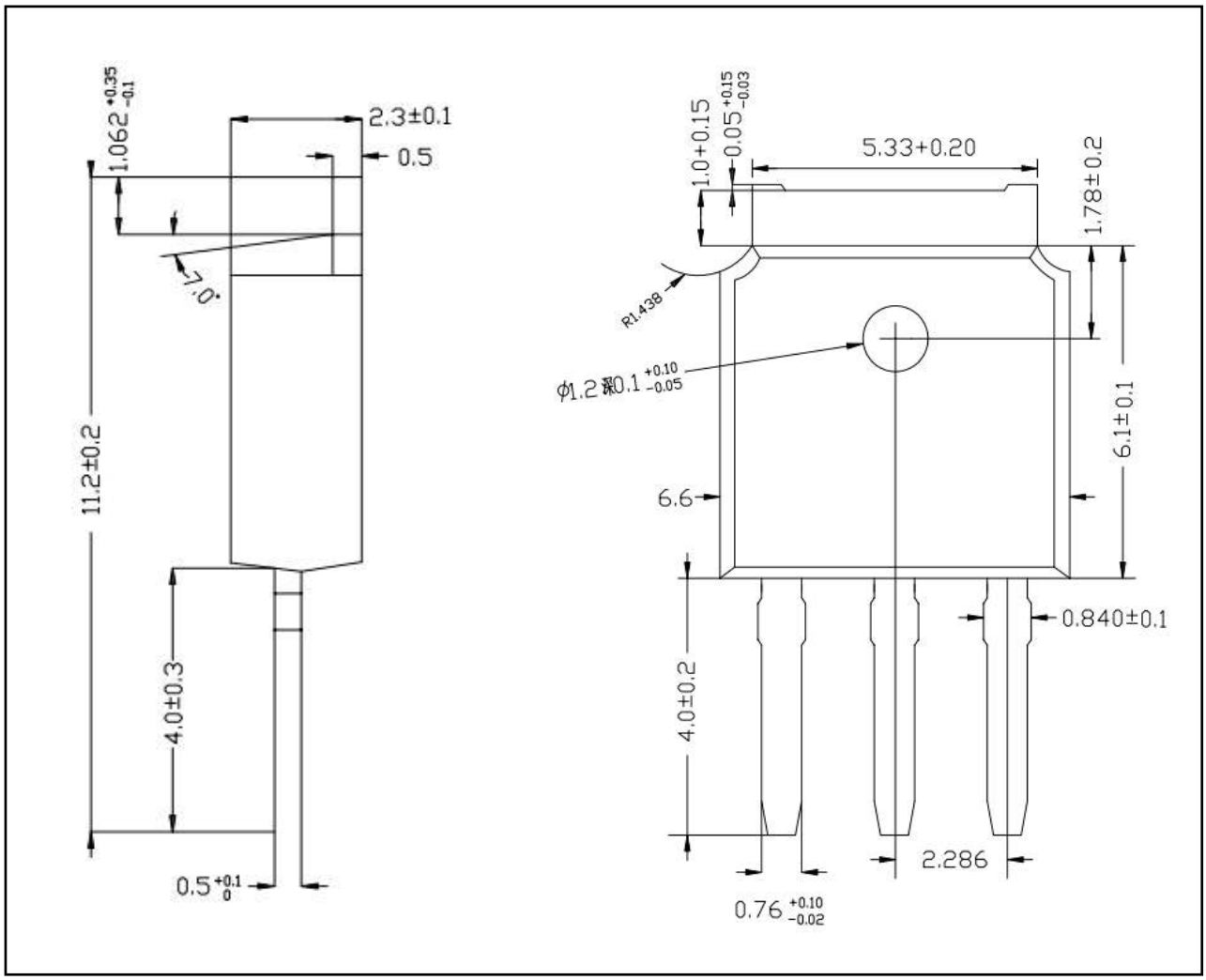
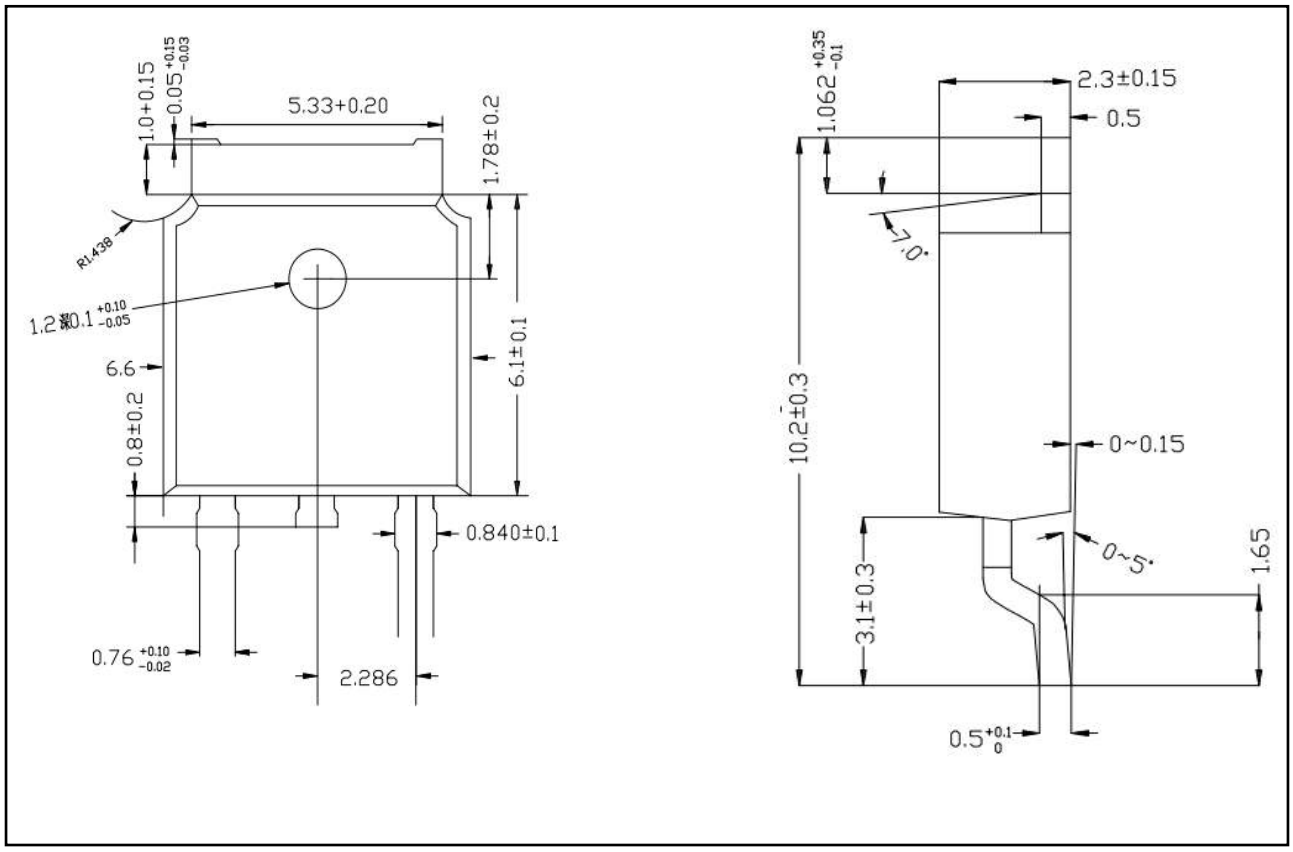


Fig 12. Gate Charge Waveform

■ TO-251PACKAGE OUTLINE DIMENSIONS



■ TO-252 PACKAGE OUTLINE DIMENSIONS



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