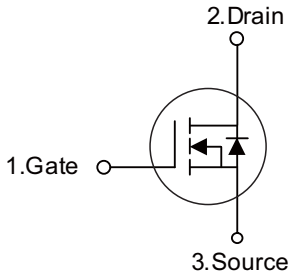
■ PRODUCT CHARACTERISTICS

VDSS	30V
R_{DS}(on)Typ(@V_{GS}=10 V)	10mΩ
R_{DS}(on)Typ(@V_{GS}=4.5 V)	15mΩ
ID	20A

Symbol



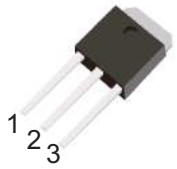
■ FEATURES

High density cell design for ultra low Rdson
Fully characterized Avalanche voltage and current
Good stability and uniformity with high E_{AS}
Excellent package for good heat dissipation
Special process technology for high ESD capability

■ APPLICATIONS

Power switching application
Hard Switched and High Frequency Circuits
Uninterruptible Power Supply

TO-252



TO-251

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT20N03D	TO-252	2500Pieces/Reel
N/A	MOT20N03C	TO-251	70Pieces/Tube

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	20	A
Drain Current-Continuous(T_C=100℃)	I_D (100℃)	14.1	A
Pulsed Drain Current	I_{DM}	80	A
Maximum Power Dissipation	P_D	20	W
Derating factor		0.27	W/℃
Single pulse avalanche energy (Note 5)	E_{AS}	72	mJ
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃

■ THERMAL DATA

Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	6.25	℃/W

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	0.7	-	2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=10A	-	10	15	mΩ
		V_{GS}=4.5V, I_D=10A	-	15	20	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=10A	26	-	-	S
Dynamic characteristics						
Input Capacitance	C_{lss}	V_{DS}=15V,V_{GS}=0V, F=1.0MHz	-	1000	-	PF
Output Capacitance	C_{oss}		-	180.8	-	PF
Reverse Transfer Capacitance	C_{rss}		-	164.4	-	PF
Switching characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=15V, R_L=0.75Ω V_{GS}=10V,R_G=3Ω	-	5	-	nS
Turn-on Rise Time	t_r		-	12	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	19	-	nS
Turn-Off Fall Time	t_f		-	6	-	nS
Total Gate Charge	Q_g	V_{DS}=15V,I_D=10A, V_{GS}=10V	-	17		nC
Gate-Source Charge	Q_{gs}		-	2.8		nC
Gate-Drain Charge	Q_{gd}		-	3.9		nC
Drain-source diode characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=10A	-		1.2	V
Diode Forward Current	I_S		-	-	20	A
Reverse Recovery Time	t_{rr}	TJ = 25°C, IF =10A di/dt = 100A/μs(Note3)	-	19	-	nS
Reverse Recovery Charge	Qrr		-	10	-	nC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

■TYPICAL CHARACTERISTICS

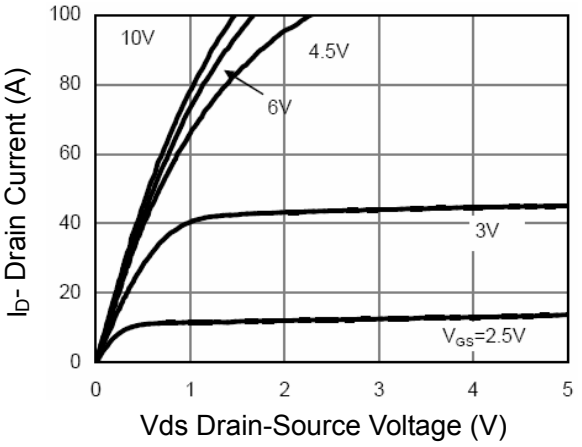


Figure 1 Output Characteristics

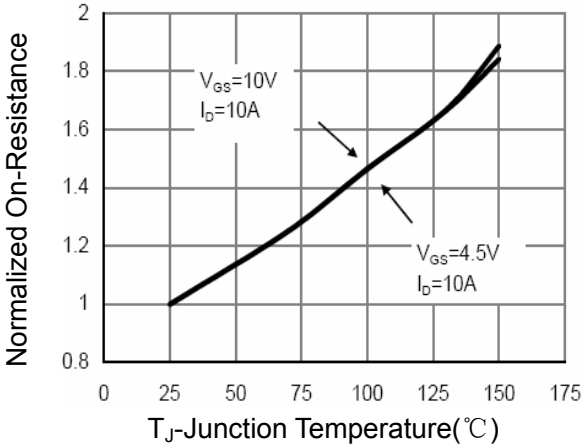


Figure 2 Rdson-Junction Temperature

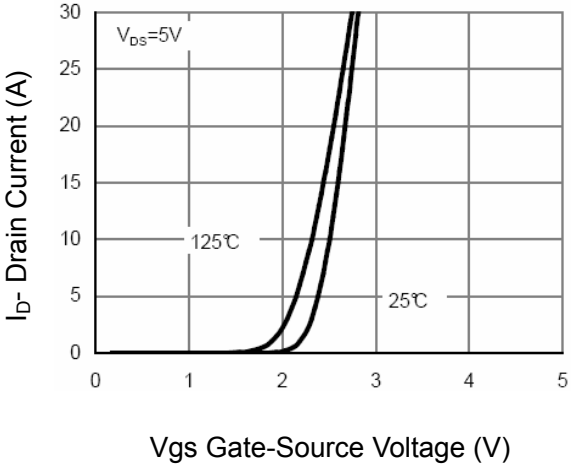


Figure 3 Transfer Characteristics

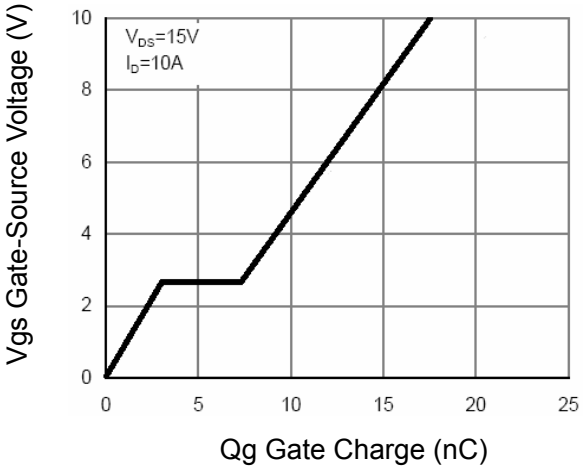


Figure 4 Gate Charge

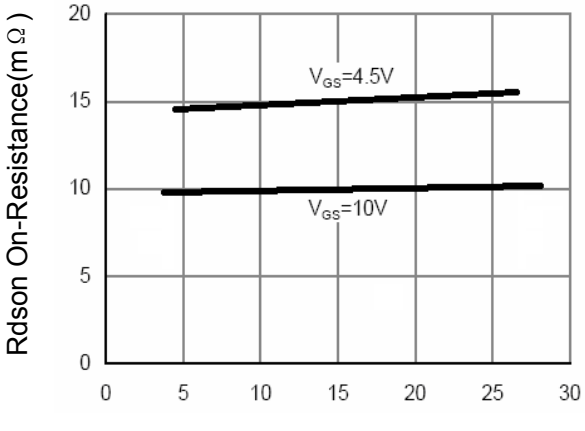


Figure 5 Rdson- Drain Current

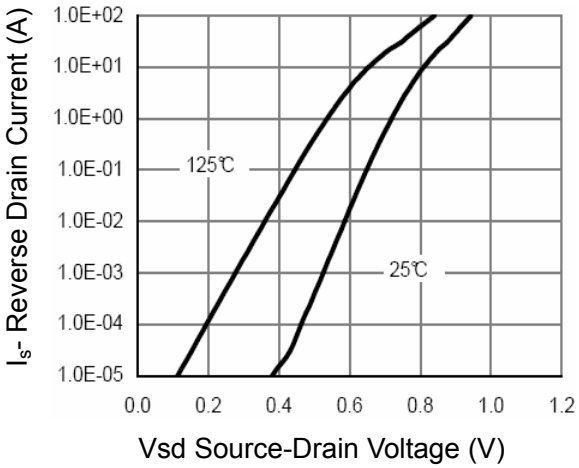


Figure 6 Source- Drain Diode Forward

■TYPICAL CHARACTERISTICS(Cont.)

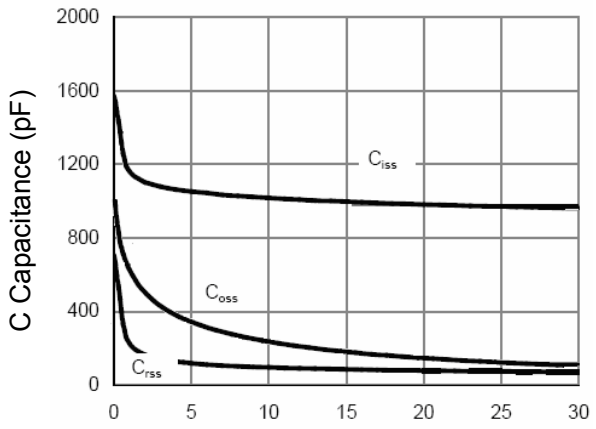


Figure 7 Capacitance vs Vds

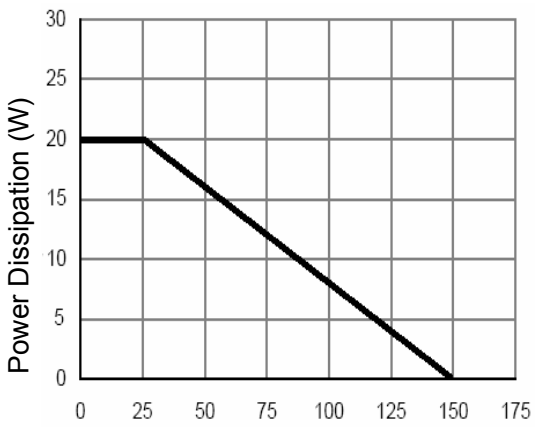


Figure 8 Power De-rating

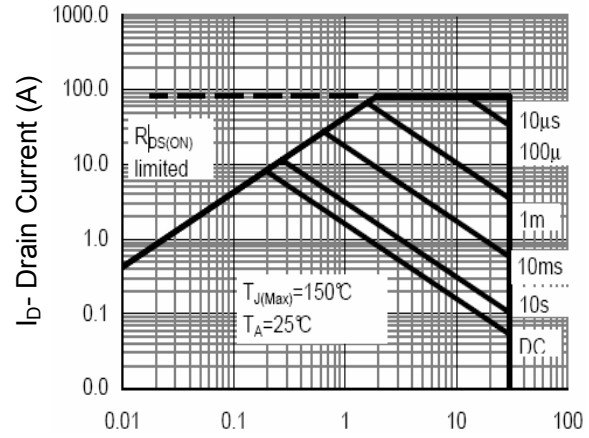


Figure 9 Safe Operation Area

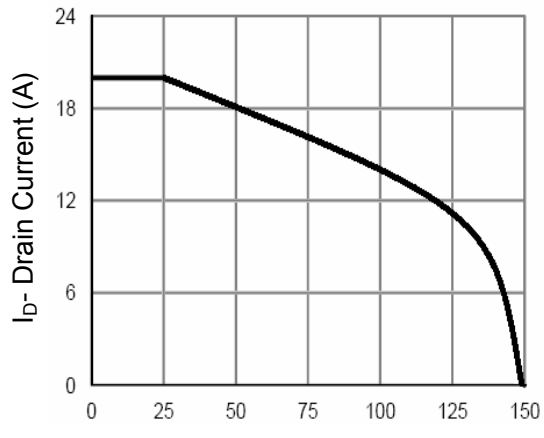


Figure 10 I_D Current De-rating

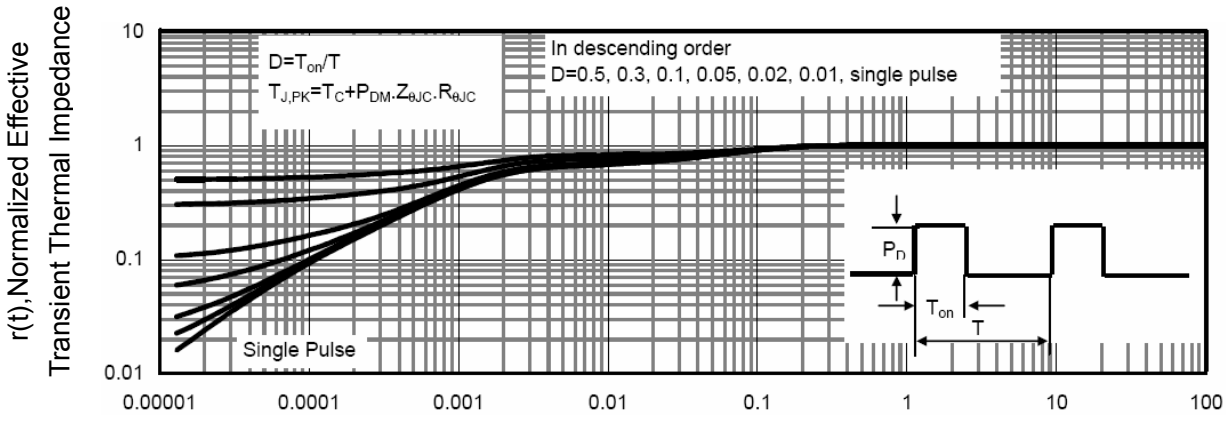
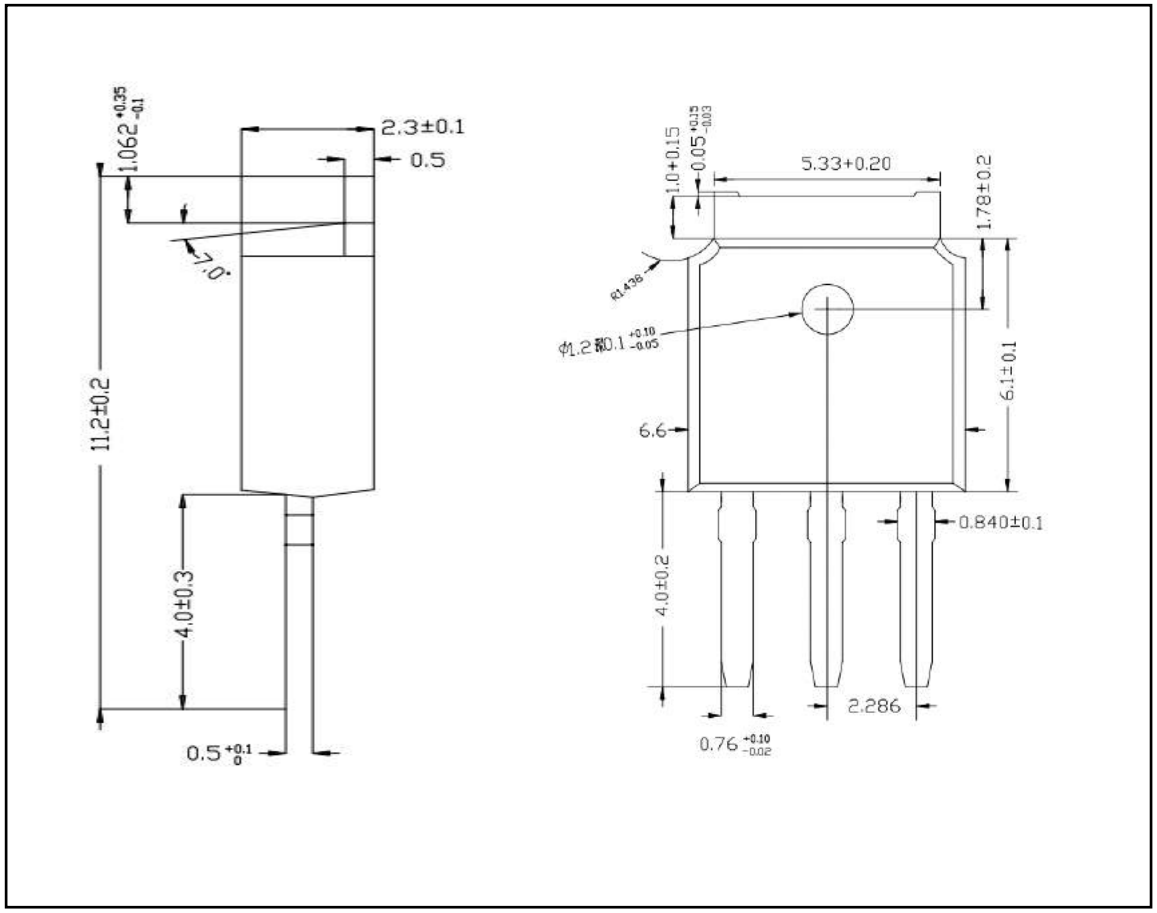


Figure 11 Normalized Maximum Transient Thermal Impedance

■ TO-251 PACKAGE OUTLINE DIMENSIONS



■ TO-252 PACKAGE OUTLINE DIMENSIONS