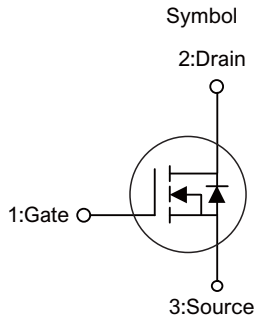
■ PRODUCT CHARACTERISTICS

V_{DSS}	100V
$R_{DS(ON)}$Typ(@V_{GS} =4.5V)	21mΩ
$R_{DS(ON)}$Typ(@V_{GS} =10V)	16mΩ
ID	40A

Symbol



■ APPLICATIONS

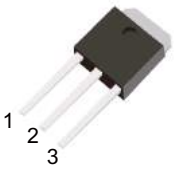
Power managerment in telecom.,industrial automation,CE
Current switching in DC/DC-AC/DC sub-systems
Motor driving in power tool
E-vehicle,robotics

■ FEATURES

*Low gate charge
*UIS tested,100% Rg tested
*Pb-free lead plating
*Halogen-free and RoHS-compliant



TO-252



TO-251

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT40N10D	TO-252	2500 pieces/Reel
N/A	MOT40N10C	TO-251	70 pieces/Tube

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

Parameter		Symbol	Ratings	Unit
Drain-to-source voltage		V_{DSS}	100	V
Gate-to-source voltage		V_{GSS}	±20	V
Continuous drain	T_C=25°C	I_D	40	A
	T_C=100°C	I_D	25	A
Pulsed drain current		I_{DM}	116	A
Avalanche energy		E_{AS}	24	mJ
Power dissipation	T_C=25°C	P_D	52	W
	T_C=100°C	P_D	21	W
Junction & storage temperature range		T_J,T_{STG}	~55 to +150	°C

■ THERMAL PERFORMANCE

Parameter	Symbol	Ratings	Unit
Thermal resistance, Junction-to-ambient	$R_{\theta JA}$	50	°C/W
Thermal resistance, Junction-to-case	$R_{\theta JC}$	2.4	°C/W

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250uA	100	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=80V, V_{GS}=0V	-	-	1	uA
		T_J =55°C	-	-	5	uA
Gate-body leakage current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V	-	-	±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250uA	1.2	-	2.5	V
Static drain-source on-resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=20A	-	16	20	mΩ
		V_{GS}=4.5V , I_D=15A	-	21	25	mΩ
Forward transconductance	g_{FS}	V_{DS}=5V, I_D=5A	-	-	50	S
Diode forward voltage	V_{SD}	I_S=1A, V_{GS}=0V	-	0.75	1	V
Diode continuous current	I_S	T_C=25°C	-	-	40	A
DYNAMIC PARAMETERS						
Input capacitance	C_{ISS}	V_{GS}=0V, V_{DS}= 50V, f=1MHz	-	769	-	pF
Ouput capacitance	C_{OSS}		-	171	-	pF
Reverse transfer capacitance	C_{rss}		-	5.1	-	pF
Gate resistance	R_g	V_{GS}=0V, V_{DS}= 0V, f=1MHz	-	1.9	-	Ω
SWITCHING PARAMETERS						
Total charge	Q_g	V_{GS}=0 to 10V V_{DS}=50V, I_D=10A	-	12.7	-	nC
Gate source charge	Q_{gs}		-	2.1	-	nC
Gate drain charge	Q_{gd}		-	3.3	-	nC
Turn-on delay time	$t_{D(on)}$	V_{GS}=10V, V_{DS}=50V R_L=2.5Ω , R_{GEN} =6Ω	-	4.3	-	nS
Turn-on rise time	t_r		-	16.7	-	nS
Turn-off delay time	$t_{D(off)}$		-	8.7	-	nS
Turn-off fall time	t_f		-	14.8	-	nS
Body-diode reverse recovery time	t_{rr}	I_F=15A, dI_F/dt =100A/us	-	39	-	nS
Body-diode reverse recovery charge	Q_{rr}	I_F=15A, dI_F/dt =100A/us	-	30	-	nC

■ TYPICAL CHARACTERISTICS

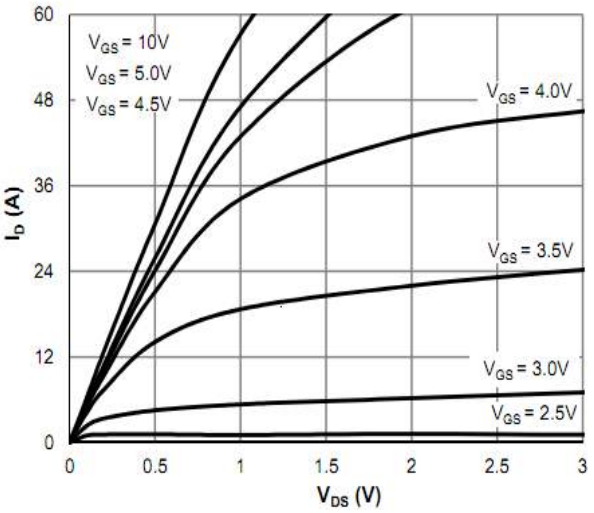


Figure 1: Saturation Characteristics

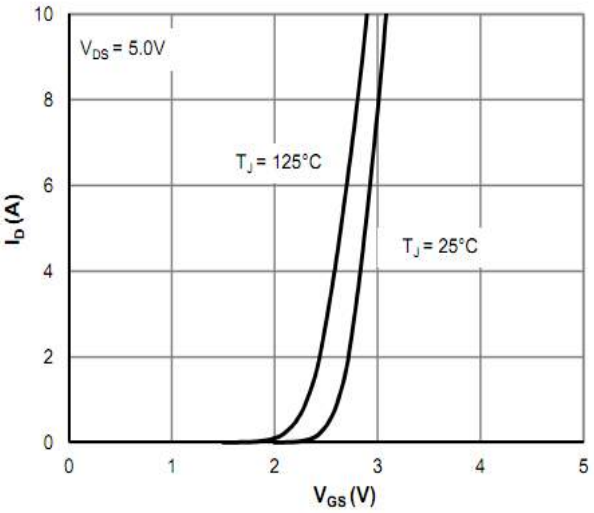


Figure 2: Transfer Characteristics

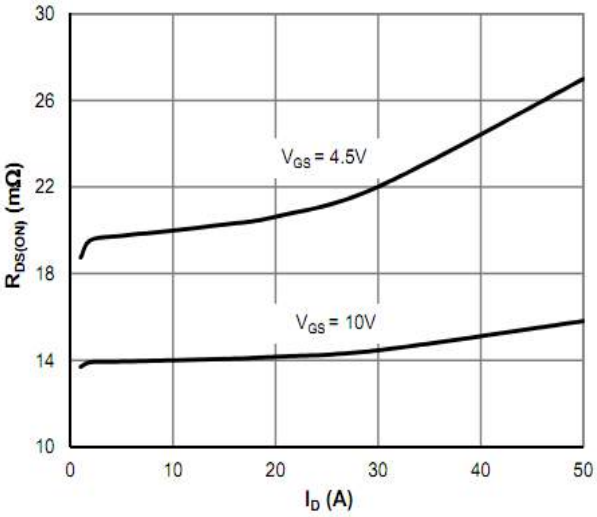


Figure 3: $R_{DS(ON)}$ vs. Drain Current

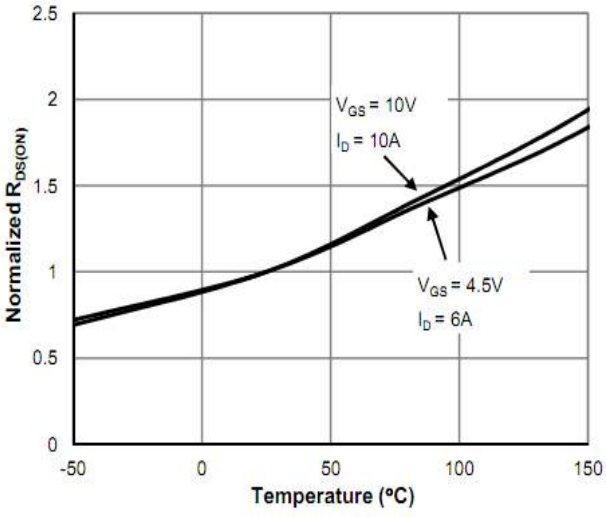


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

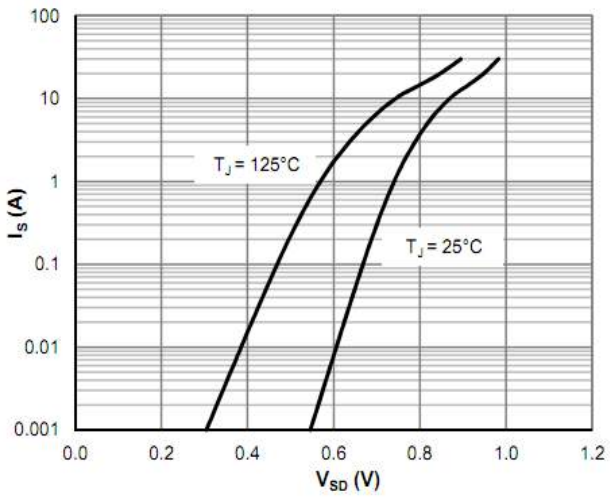


Figure 5: Body-Diode Characteristics

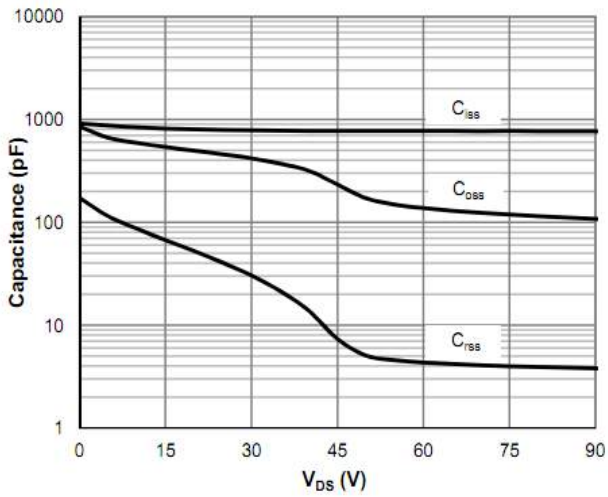


Figure 6: Capacitance Characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

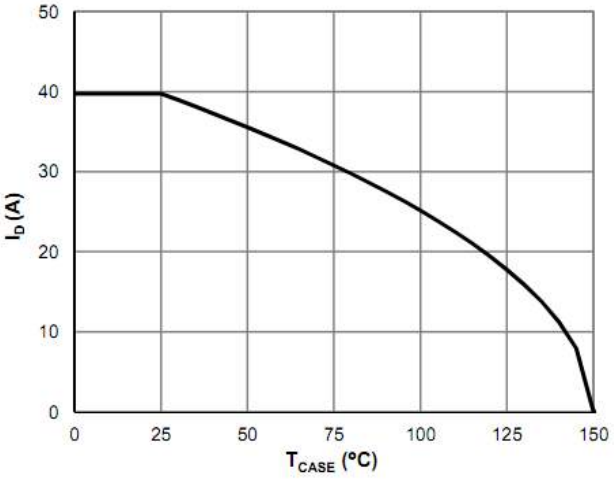


Figure 7: Current De-rating

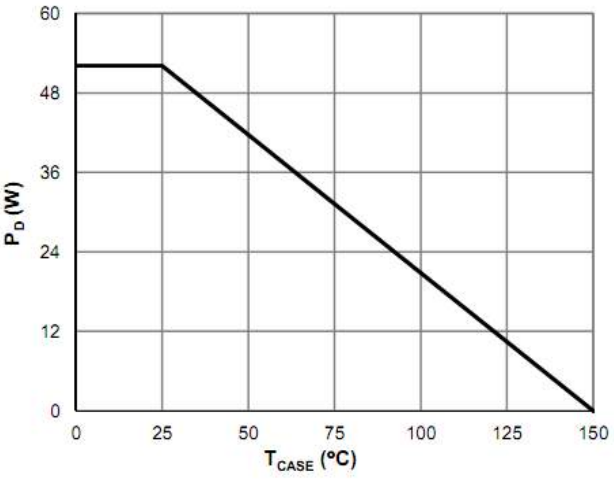


Figure 8: Power De-rating

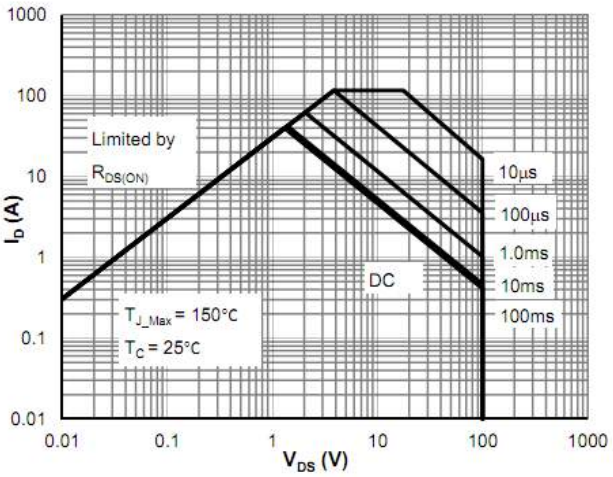


Figure 9: Maximum Safe Operating Area

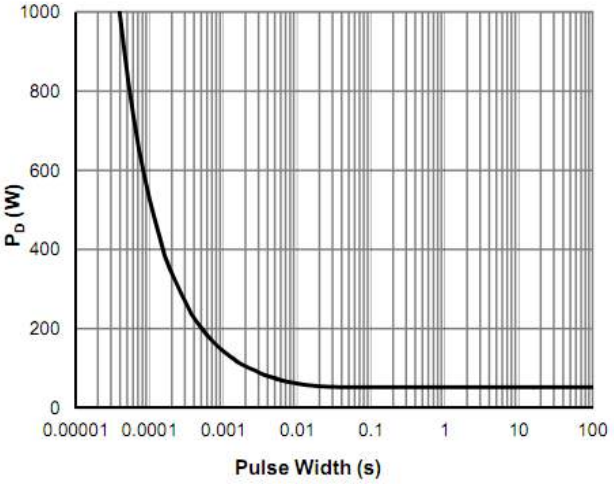


Figure 10: Single Pulse Power Rating, Junction-to-Case

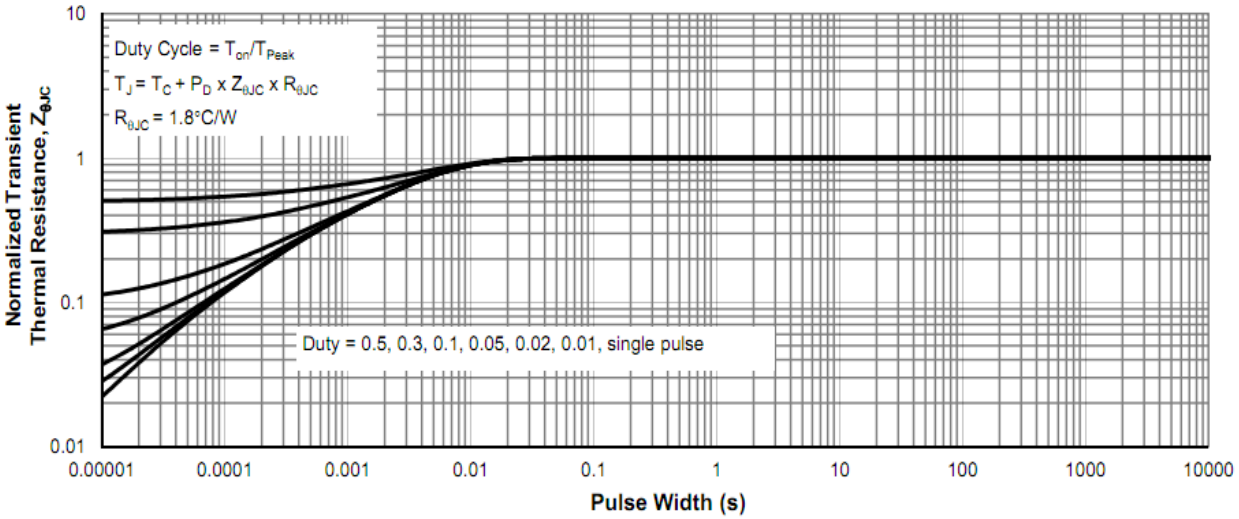
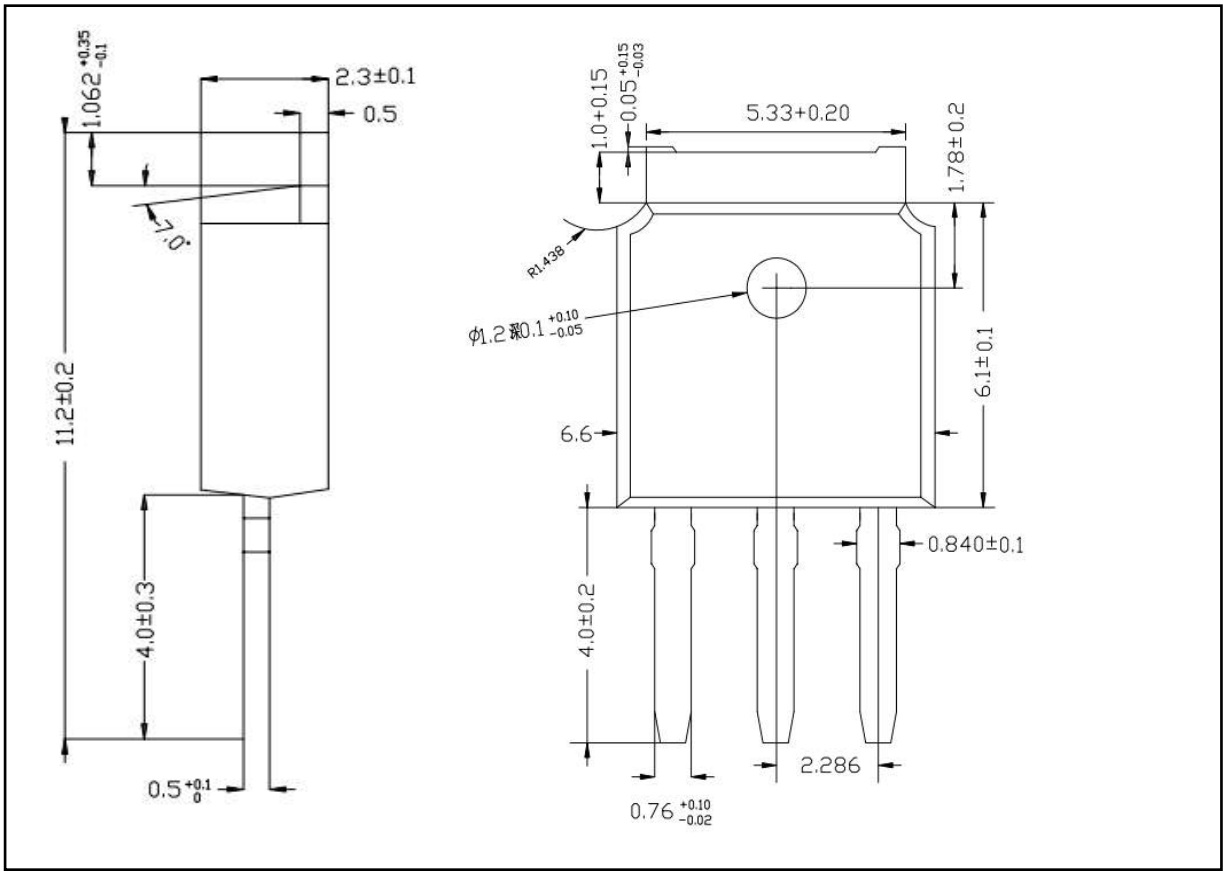


Figure 11: Normalized Maximum Transient Thermal Impedance

■ TO-251 PACKAGE OUTLINE DIMENSIONS



■ TO-252 PACKAGE OUTLINE DIMENSIONS

