

PRODUCT CHARACTERISTICS

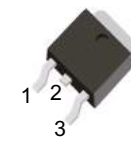
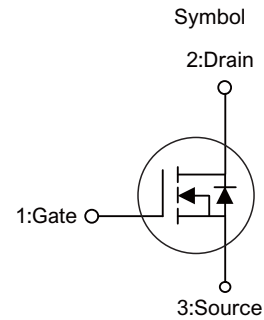
V_{DS}	20V
$R_{DS(ON)Typ}(@V_{GS}=2.5V)$	7.8m Ω
$R_{DS(ON)Typ}(@V_{GS}=4.5V)$	5.5m Ω
I_D	60A

APPLICATIONS

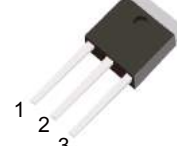
Power management in telecom., industrial automation, CE
Current switching in DC/DC-AC/DC sub-systems
Motor driving in power tool
E-vehicle, robotics

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	MOT60N02D	TO-252	2500 pieces/Reel
N/A	MOT60N02C	TO-251	70 pieces/Tube

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-to-source voltage	V_{DS}	20	V
Gate-to-source voltage	V_{GS}	± 12	V
Continuous drain	I_D	60	A
	I_D	42	A
Pulsed drain current	I_{DM}	210	A
Avalanche energy	E_{AS}	231	mJ
Power dissipation	P_D	60	W
Junction & storage temperature range	T_J, T_{STG}	~ 55 to $+150$	$^\circ\text{C}$

THERMAL PERFORMANCE

Parameter	Symbol	Ratings	Unit
Thermal resistance, Junction-to-case	$R_{\theta JC}$	2.1	$^\circ\text{C/W}$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$	-	-	1	μA
		$T_J=55^\circ\text{C}$	-	-	5	μA
Gate-body leakage current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	-	11	V
Static drain-source on-resistance	$V_{GS(th)}$	$V_{GS}=4.5V, I_D=20A$	-	5.5	8.5	m Ω
		$V_{GS}=2.5V, I_D=15A$	-	7.8	9.7	m Ω
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	$T_C=25^\circ\text{C}$	-	-	60	A
DYNAMIC PARAMETERS						
Input capacitance	C_{ISS}	$V_{GS}=0V, V_{DS}=10V, f=1\text{MHz}$	-	2800	-	pF
Output capacitance	C_{OSS}		-	368	-	pF
Reverse transfer capacitance	C_{RSS}		-	341	-	pF
Gate resistance	R_g	$V_{GS}=0V, V_{DS}=0V, f=1\text{MHz}$	-	1.2	-	Ω
SWITCHING PARAMETERS						
Total charge	Q_g	$V_{GS}=4.5V$ $V_{DS}=10V, I_D=20A$	-	35	-	nC
Gate source charge	Q_{gs}		-	3	-	nC
Gate drain charge	Q_{gd}		-	10	-	nC
Turn-on delay time	$t_{D(on)}$	$V_{GS}=4.5V, V_{DD}=10V$ $I_D=2A, R_{GEN}=3\Omega$	-	6.4	-	nS
Turn-on rise time	t_r		-	17.2	-	nS
Turn-off delay time	$t_{D(off)}$		-	29.6	-	nS
Turn-off fall time	t_f		-	16.8	-	nS
Body-diode reverse recovery time	t_{rr}	$I_F=20A, dI_F/dt=100A/\mu s$	-	25	-	nS
Body-diode reverse recovery charge	Q_{rr}	$I_F=20A, dI_F/dt=100A/\mu s$	-	24	-	nC

■ TYPICAL CHARACTERISTICS

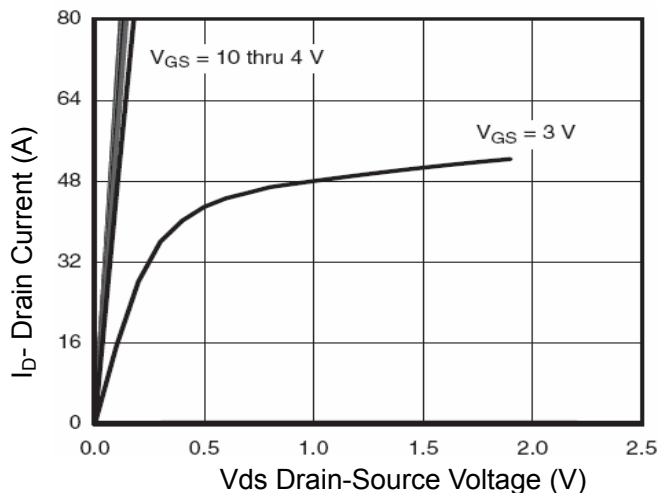


Figure 1 Output Characteristics

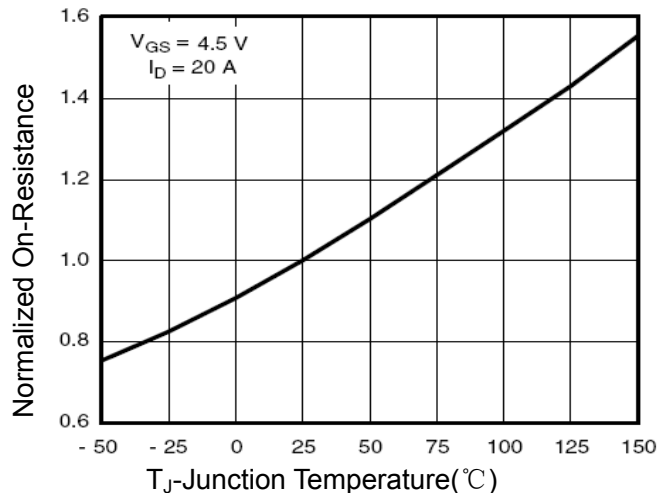


Figure 2 $R_{DS(on)}$ -Junction Temperature

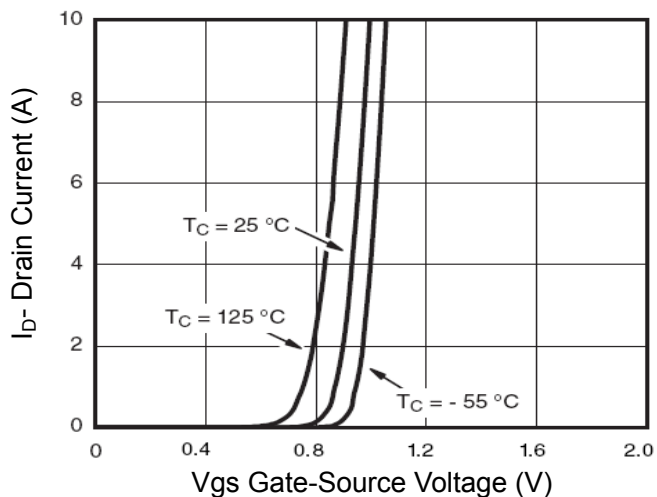


Figure 3 Transfer Characteristics

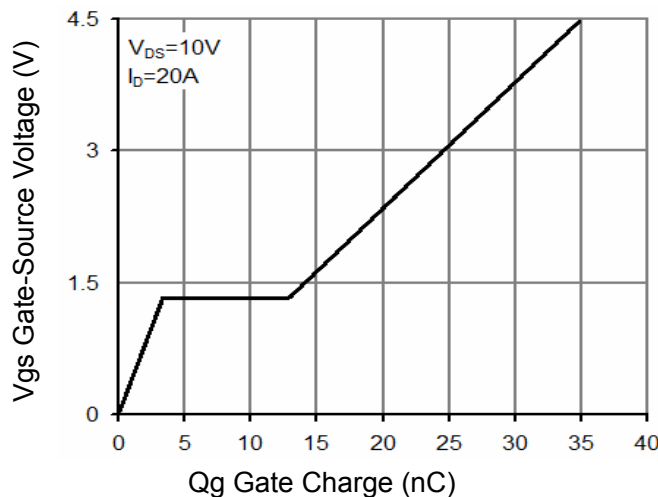


Figure 4 Gate Charge

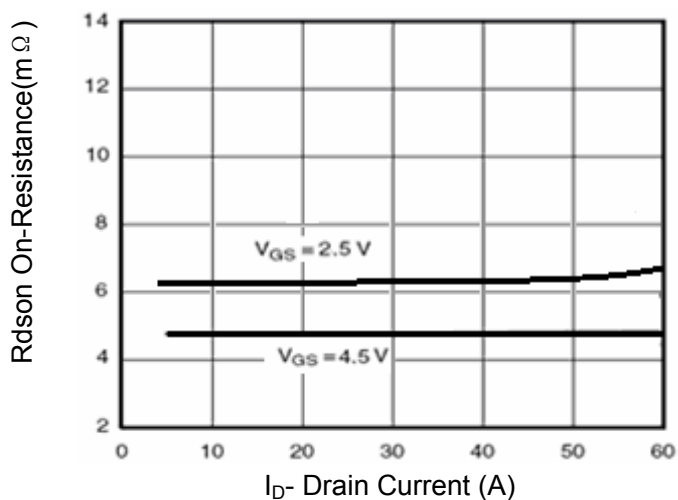


Figure 5 $R_{DS(on)}$ - Drain Current

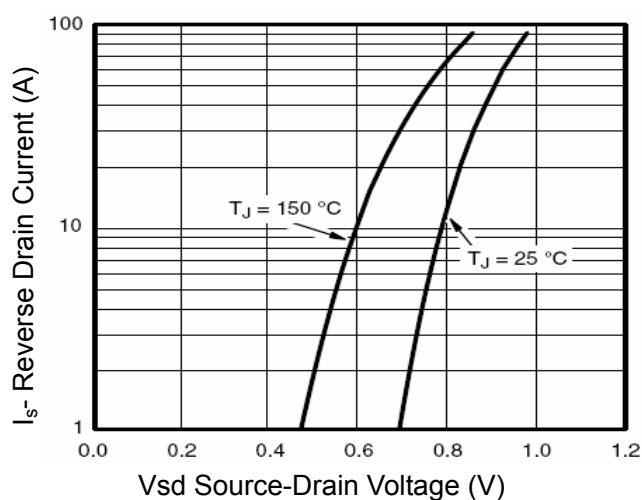


Figure 6 Source- Drain Diode Forward

■ TYPICAL CHARACTERISTICS(Cont.)

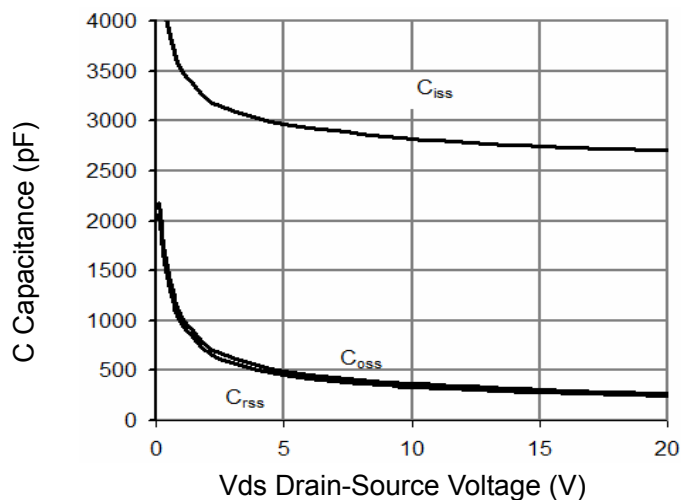


Figure 7 Capacitance vs V_{DS}

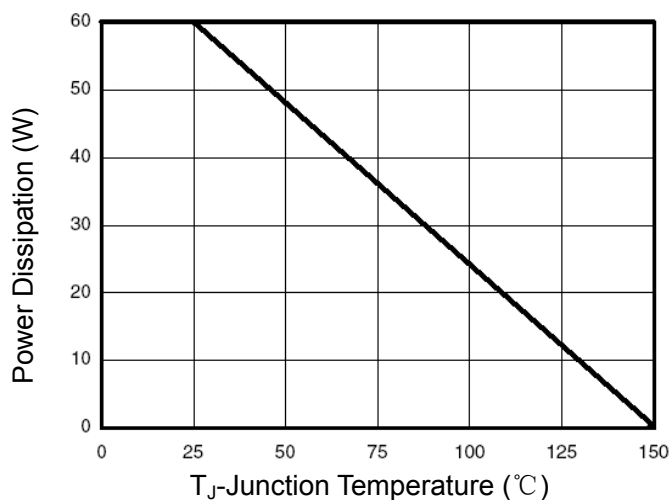


Figure 8 Power De-rating

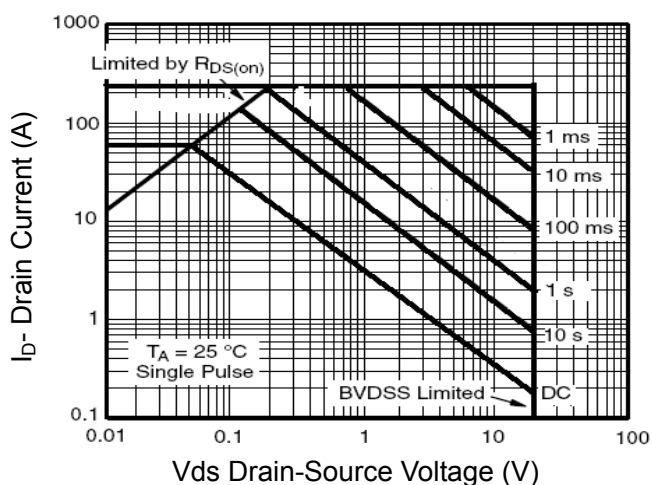


Figure 9 Safe Operation Area

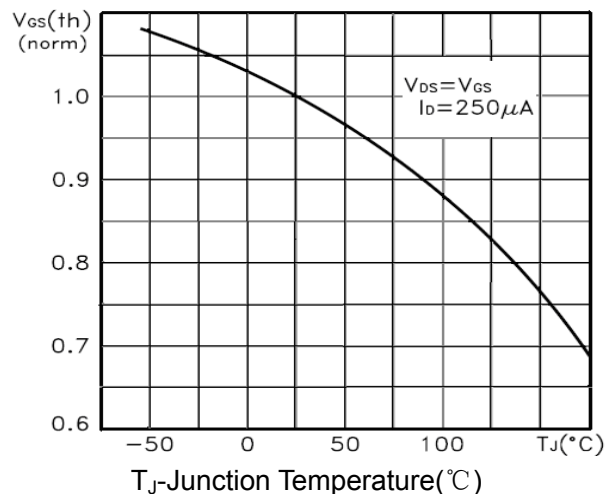


Figure 10 $V_{GS(th)}$ vs Junction Temperature

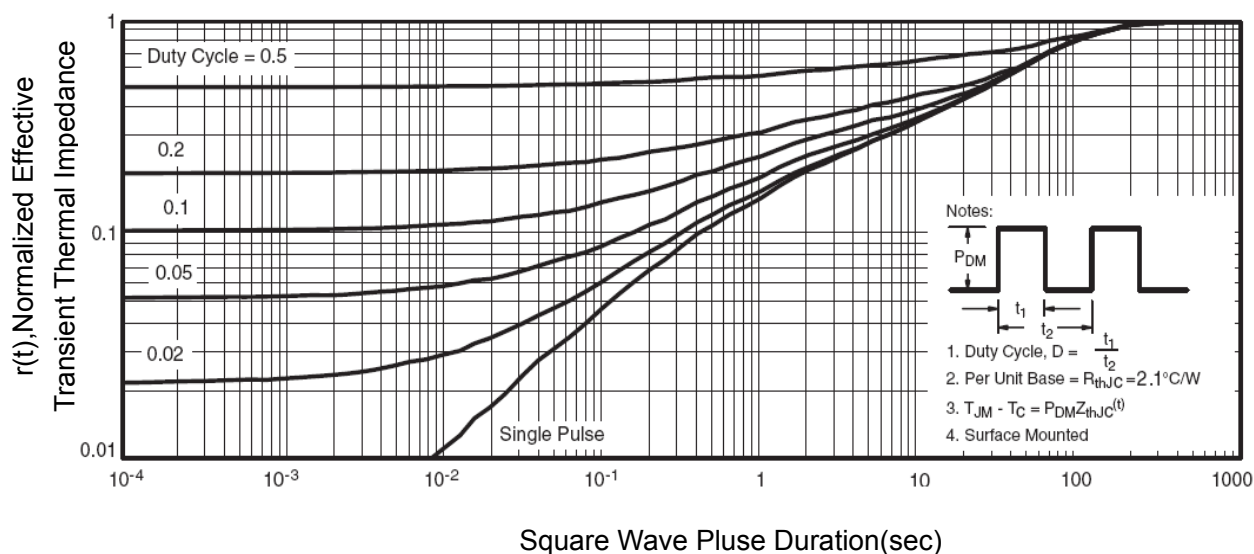


Figure 11 Normalized Maximum Transient Thermal Impedance

■ TO-251 PACKAGE OUTLINE DIMENSIONS

