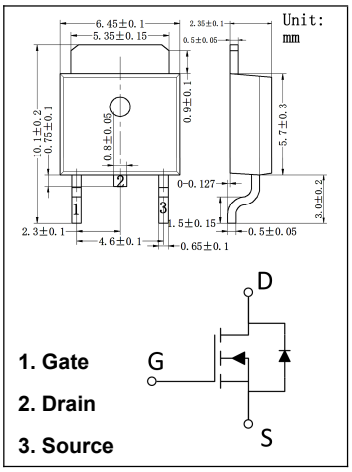
TO-252 Plastic-Encapsulate MOSFETS

D2N60D

100V N-Channel MOSFET



Features

- Low Intrinsic Capacitances.
- Excellent Switching Characteristics.
- Extended Safe Operating Area.
- Unrivalled Gate Charge :Qg= 6.8nC (Typ.)
- B_{VDSS}=600V,I_D=2A
- $R_{DS(on)}$: 4.5Ω (Max) @V_G=10V
- 100% Avalanche Tested

Maximum Ratings (T_a=25°C unless otherwise specified)

Symbol	Parameter		Value	Unit
V_{DS}	Drain-Source voltage		600	V
I_D	Drain Current	T_C = 25 °C	2	A
		T_C = 100 °C	1.25	
$V_{GS(th)}$	Gate-Threshold Voltage		±30	V
I_{AR}	Avalanche Current 2)		2	A
E_{AS}	Single Pulse Avalanche Energy 1)		120	mJ
P_D	Maximum Power Dissipation		44	W
T_J	Junction Temperature(MAX)		150	°C
T_{STG}	Storage Temperature		-55 to +150	°C
T_L	Maximum lead temperature for soldering purpose,1/8”from case for 5 seconds		300	°C
$R_{\theta JA}$	Maximum Junction-to-Ambient		110	°C/W
$R_{\theta JC}$	Maximum Junction-to-Case (Drain)		2.87	°C/W

Electrical Characteristics (T_J=25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	600			V
$V_{GS(th)}$	Gate-Threshold Voltage [3]	V_{DS} = V_{GS}, I_D = 250μA	2		4	V
I_{GSS}	Gate-body Leakage current	V_{DS}=0 V, V_{GS}=±30 V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=600V, V_{GS}=0V			1	μA
$R_{DS(on)}$	Drain-Source On-Resistance [3]	V_{GS}=10V, I_D = 1A			4.5	Ω
C_{iss}	Input Capacitance [4]	V_{GS} = 0V V_{DS} = 25V f = 1.0MHz		298		pF
C_{oss}	Output Capacitance [4]			40		
C_{rss}	Reverse Transfer Capacitance [4]			5		
Q_g	Total Gate Charge[4]	V_{GS} = 10 V, I_D = 2 A, V_{DS} =480 V		6.8		nC
Q_{gs}	Gate-Source Charge[4]			2.0		
Q_{gd}	Gate-Drain Charge[4]			1.8		
$t_{d(on)}$	Turn-On Delay Time[4]	V_{DD} = 300 V, I_D=2A R_G = 25 Ω		10	30	ns
t_r	Rise Time[4]			24	60	
$t_{d(off)}$	Turn-Off Delay Time[4]			20	50	
t_f	Fall Time[4]			25	60	
I_S	Continuous Source-Drain Diode Current	[2]			2	A
V_{SD}	Diode Forward Voltage[3]	I_S = 10A,V_{GS} = 0V			1.5	V
t_{rr}	Body Diode Reverse Recovery Time	T_J = 25 °C, I_S = 2 A, dI/dt = 100 A/μs		380		nS
Q_{rr}	Body Diode Reverse Recovery Charge			0.9		μC
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by L_S + L_D)				

Notes

1.Repetitive Rating: Pulse width limited by maximum junction temperature..

2.Surface Mounted on FR4 Board, t ≤ 10 sec.

3.Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

4.Guaranteed by design, not subject to production

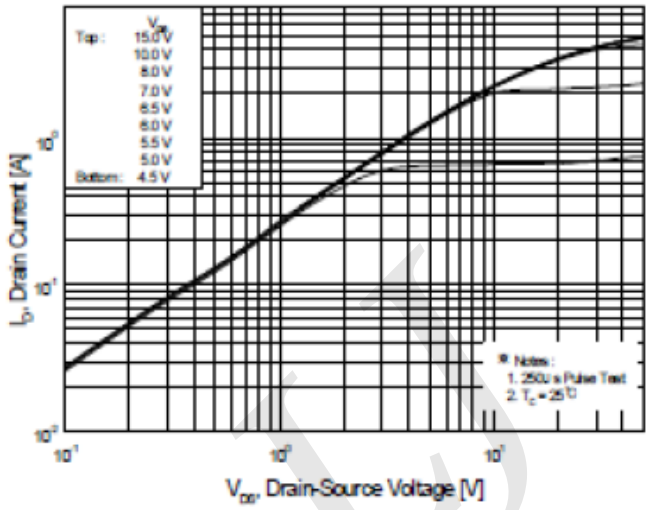


Figure 1. On-Region Characteristics

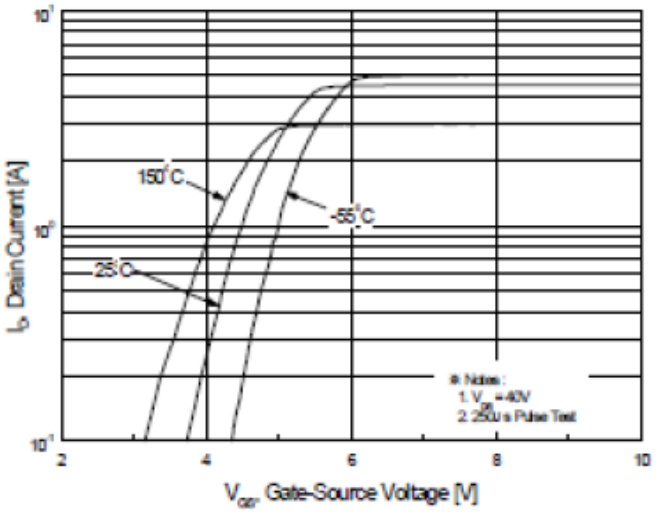


Figure 2. Transfer Characteristics

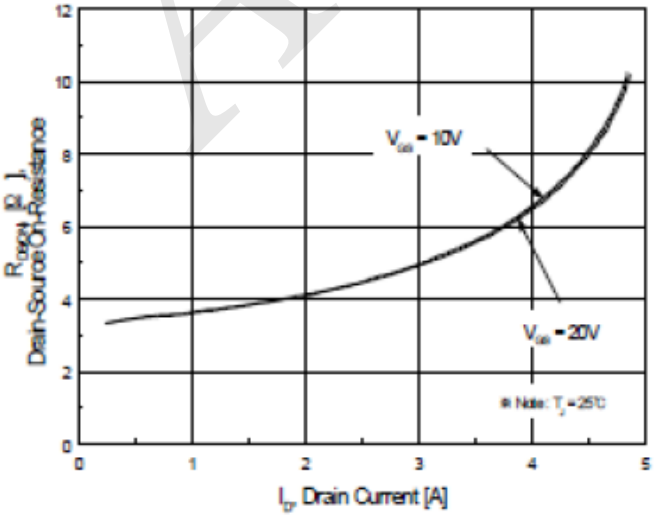


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

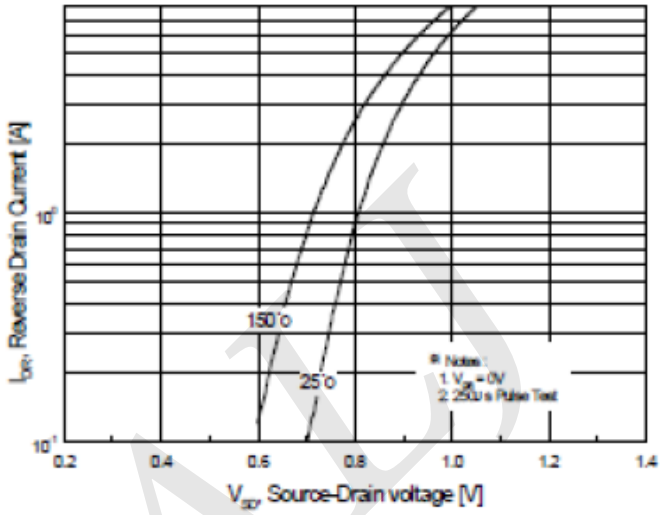


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

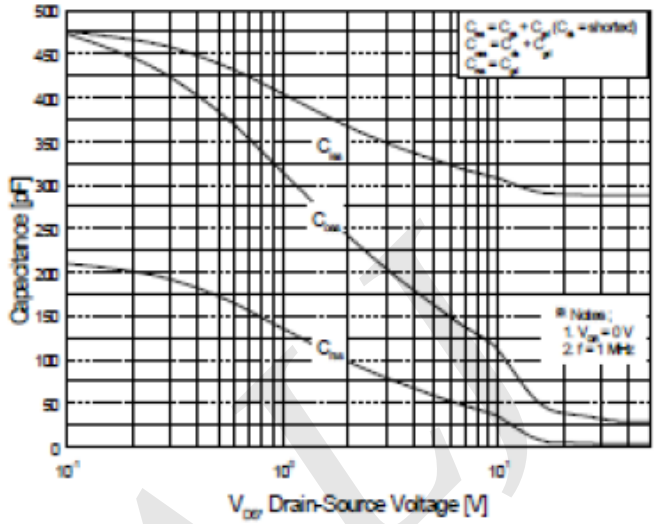


Figure 5. Capacitance Characteristics

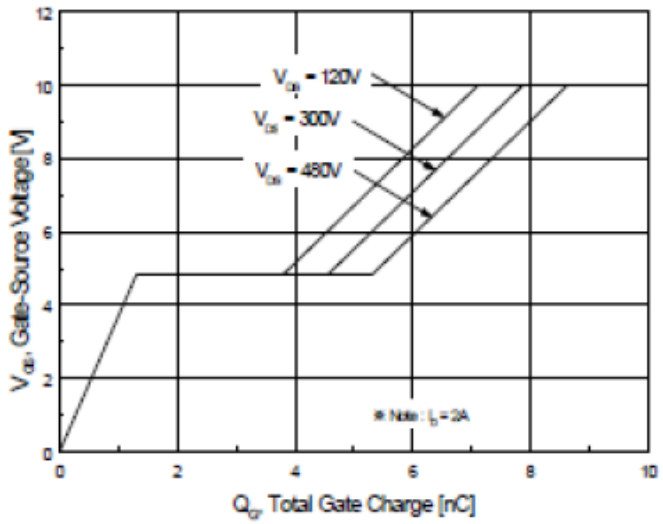


Figure 6. Gate Charge Characteristics

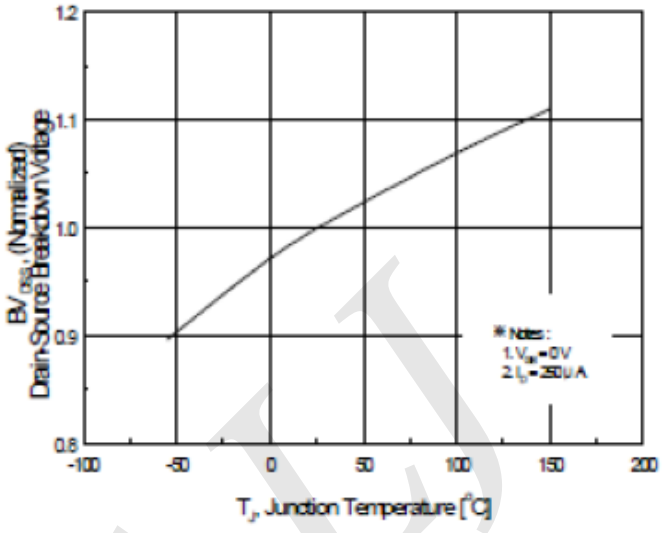


Figure 7. Breakdown Voltage Variation vs Temperature

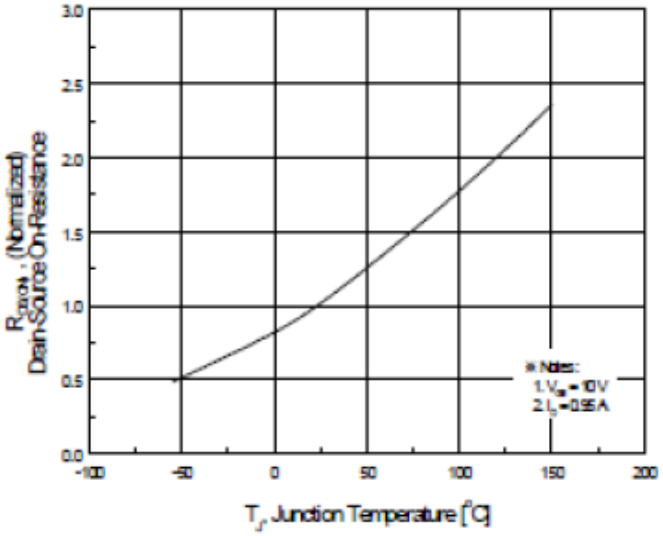


Figure 8. On-Resistance Variation vs Temperature

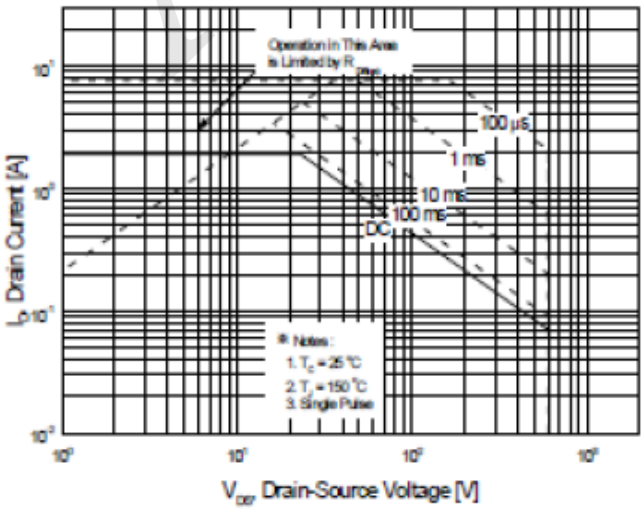


Figure 9. Maximum Safe Operating Area

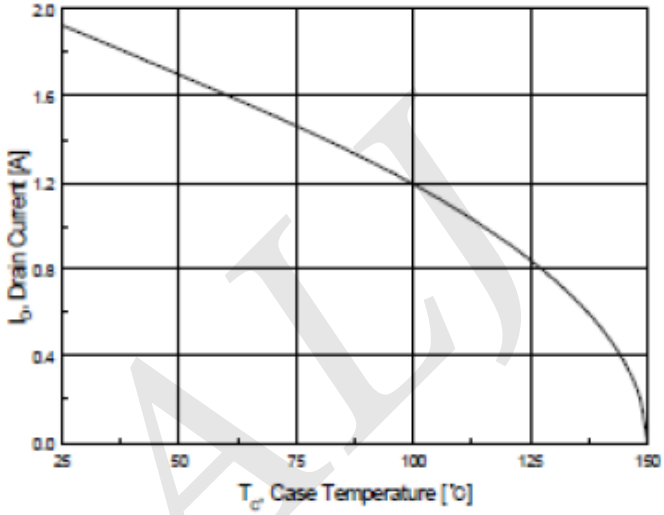


Figure 10. Maximum Drain Current vs Case Temperature

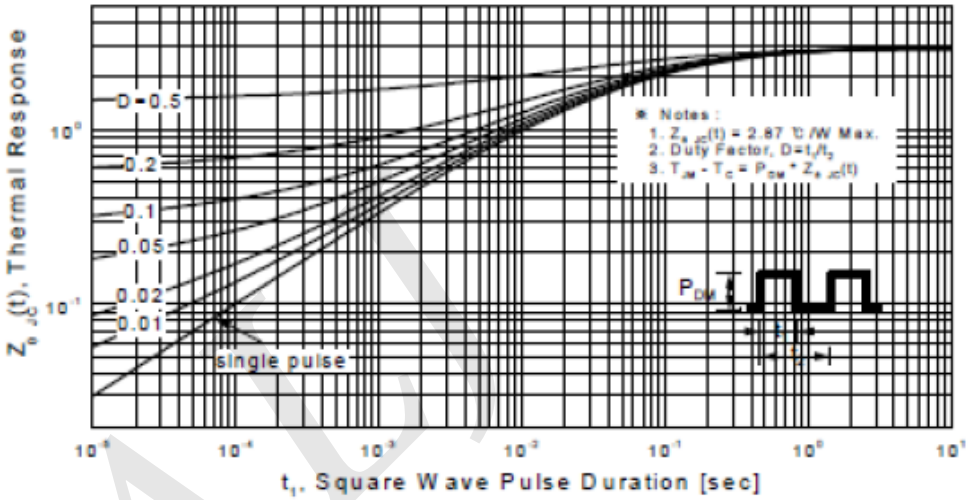


Figure 11. Transient Thermal Response Curve