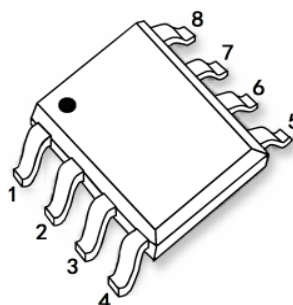


60V Dual N-Channel Mosfet

FEATURES

- $R_{DS(ON)} \leq 40m\Omega$ (30m Ω Typ.)
@ $V_{GS}=10V$
- $R_{DS(ON)} \leq 50m\Omega$ (36m Ω Typ.)
@ $V_{GS}=4.5V$

SOP-8

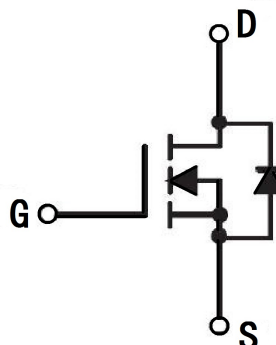


APPLICATIONS

- Load Switch
- PWM Application
- Power management

1: S2 3: S1 5: D1 7: D2
2: G2 4: G1 6: D1 8: D2

N-CHANNEL MOSFET



MAXIMUM RATINGS $T_a=25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current	$T_A = 25^\circ\text{C}$	5	A
		$T_A = 100^\circ\text{C}$	3.3	A
I_{DM}	Pulsed Drain Current note1		20	A
EAS	Single Pulsed Avalanche Energy note2		18.9	mJ
P_D	Power Dissipation	$T_A = 25^\circ\text{C}$	2	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		62.5	$^\circ\text{C/W}$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS Ta= 25°C unless otherwise specified :

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 60V, V _{GS} = 0V, T _J = 25℃	-	-	1	μA
I _{GSS}	Gate to Body Leakage Current	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D = 250μA	1	1.6	2.5	V
R _{DS(on)}	Static Drain-Source On-Resistance ^{note3}	V _{GS} =10V, I _D =5A	-	30	40	mΩ
		V _{GS} =4.5V, I _D =3A	-	36	50	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} = 0V, f = 1.0MHz	-	1148	-	pF
C _{oss}	Output Capacitance		-	58.5	-	pF
C _{rss}	Reverse Transfer Capacitance		-	49.4	-	pF
Q _g	Total Gate Charge	V _{DS} =30V, I _D =2.5A, V _{GS} =10V	-	20.3	-	nC
Q _{gs}	Gate-Source Charge		-	3.7	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	5.3	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{GS} = 10V, V _{DS} =30V, I _D =5A, R _G =1.8Ω	-	7.6	-	ns
t _r	Turn-On Rise Time		-	20	-	ns
t _{d(off)}	Turn-Off Delay Time		-	15	-	ns
t _f	Turn-Off Fall Time		-	24	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	5	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	20	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S =5A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	T _J =25℃, I _{SD} =5A , V _{GS} =0V di/dt=100A/μs	-	29	-	ns
Qrr	Reverse Recovery Charge		-	43	-	nC

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition : $T_J = 25^\circ C, V_{DD} = 30V, V_G = 10V, L = 0.5mH, R_g = 25\Omega, I_{AS} = 8.7A$

3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

TYPICAL PERFORMANCE CHARACTERISTICS

Figure1: Output Characteristics

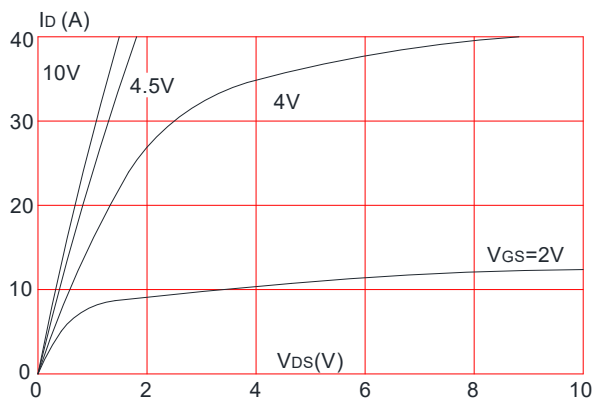


Figure 2: Typical Transfer Characteristics

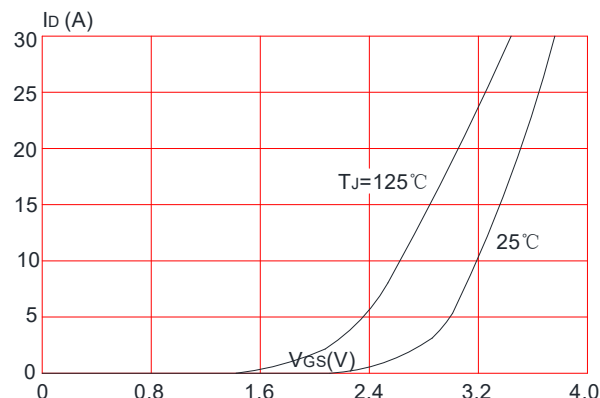


Figure 3: On-resistance vs. Drain Current

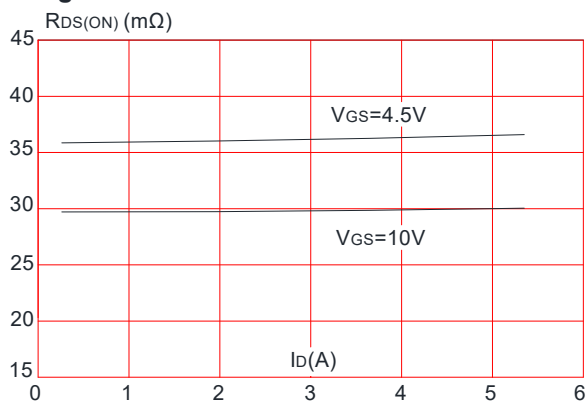


Figure 4: Body Diode Characteristics

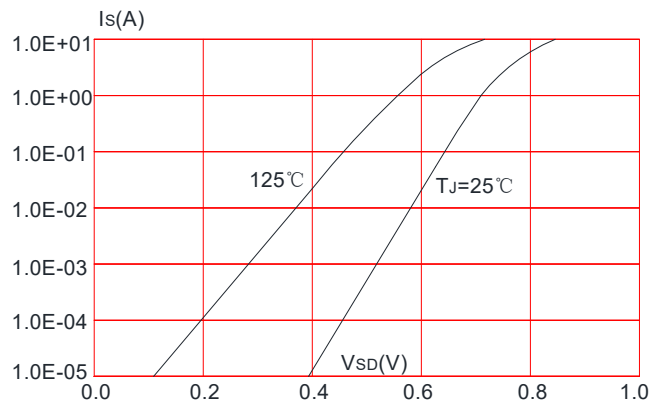


Figure 5: Gate Charge Characteristics

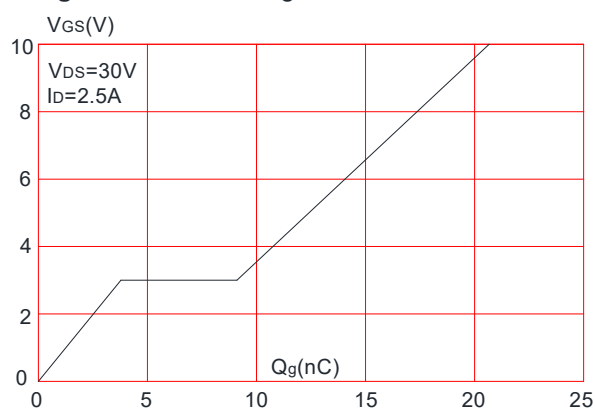
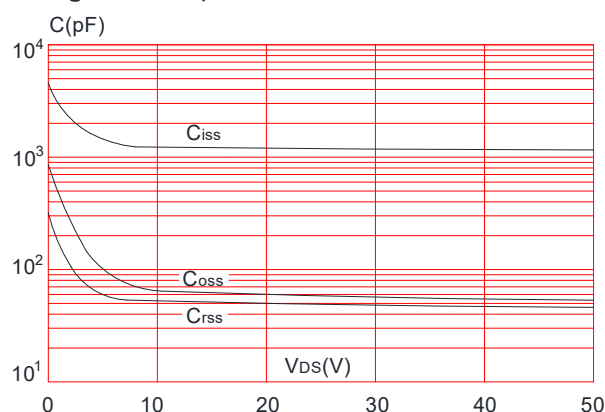


Figure 6: Capacitance Characteristics



TYPICAL PERFORMANCE CHARACTERISTICS

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

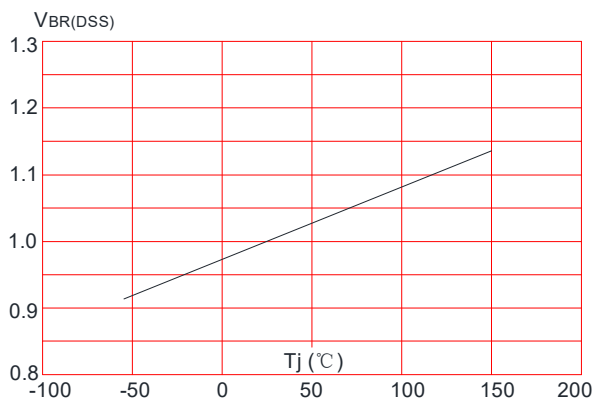


Figure 8: Normalized on Resistance vs. Junction Temperature

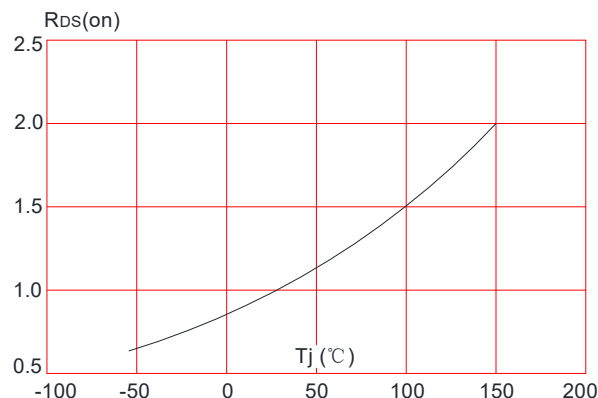


Figure 9: Maximum Safe Operating Area

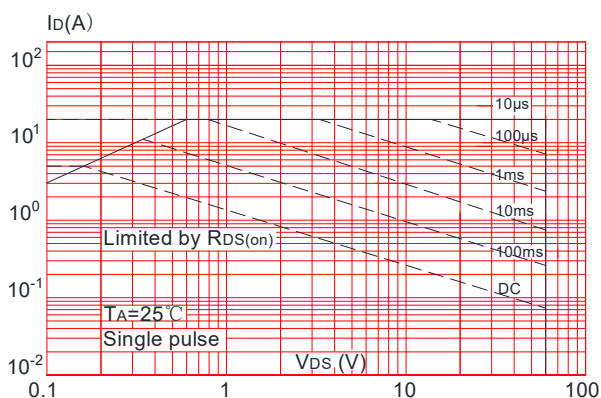


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

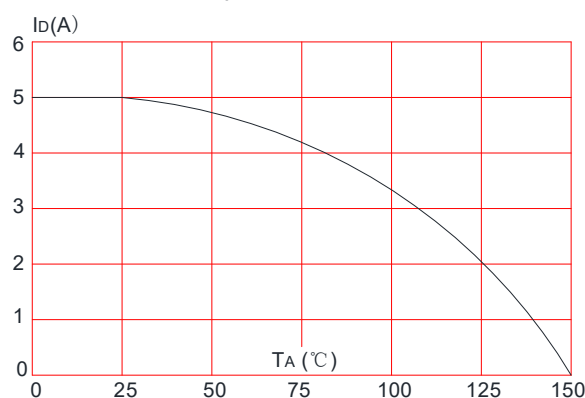
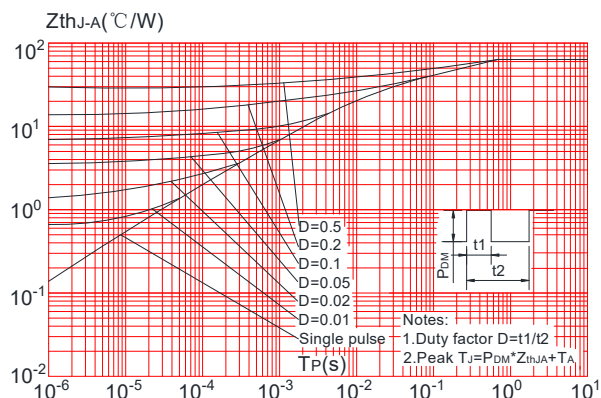
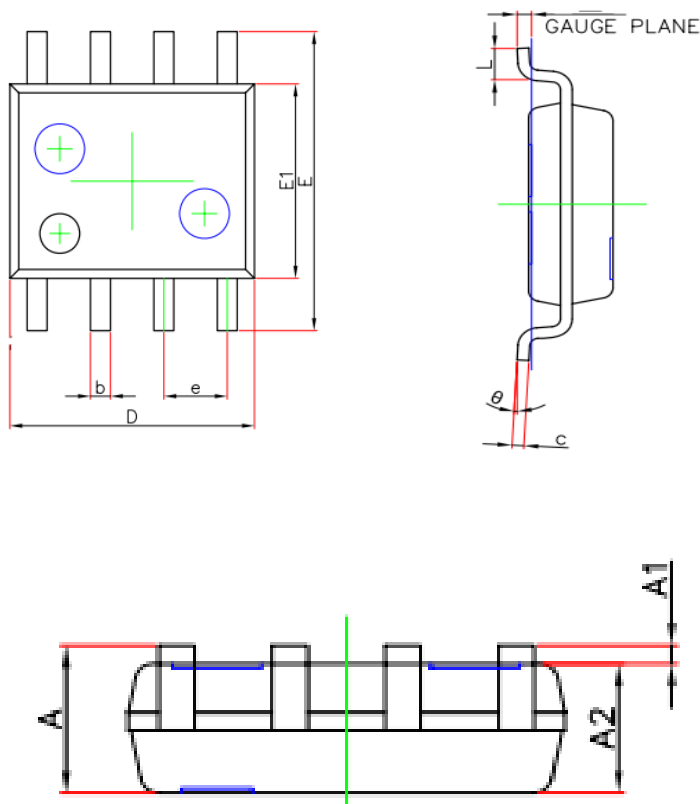


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



SOP-8 PACKAGE OUTLINE DRAWING



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.063	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E1	3.800	4.000	0.150	0.157
E	5.800	6.200	0.228	0.244
e	1.27(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°