Dual N-Channel Enhancement Mode Power MOSFET

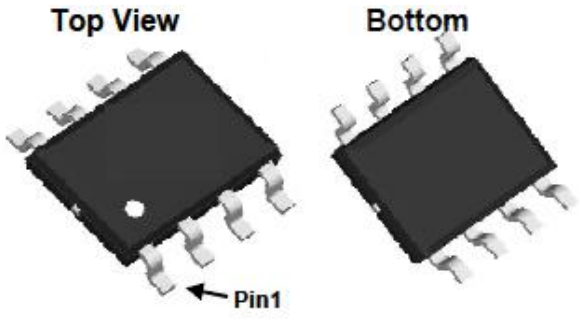
Features

V_{DS}	$R_{DS(ON)TYP}$	I_D
20V	19 mΩ@4.5V	6A
	26 mΩ@2.5V	

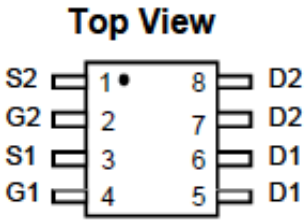
General Description

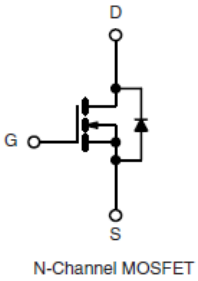
- load switch
- in PWM applications

Pin Configurations



SOP8





Absolute Maximum Ratings @T_A=25℃ unless otherwise noted

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	20	V
Gate-Source Voltage		V_{GSS}	±12	V
Drain Current (Continuous) *AC	T_A=25°C	I_D	6	A
	T_A=70°C		5	
Drain Current (Pulse) *B		I_{DM}	35	A
Power Dissipation	T_A=25°C	P_D	2	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~150	℃

Thermal Resistance Ratings

Parameter		Symbol	Maximum	Unit
Maximum Junction-to-Ambient	Steady State	R_{thJA}	62.5	°C/W

Electrical Characteristics

T_A=25℃ unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D= 250μA	20	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20 V, V_{GS} = 0V	--	--	-1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}= V_{DS}, I_{DS}= -250μA	0.5	0.65	1.2	V
Gate Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V	--	--	±100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 6A	--	19	25	mΩ
	$R_{DS(on)}$	V_{GS} = 2.5V, I_D = 5.2A	--	26	35	mΩ
Diode Forward Voltage	V_{SD}	I_{SD}= 1.7A , V_{GS}=0V	--	--	1.2	V
Diode Forward Current	I_S	TC =25°C	--	--	1.7	A
Switching						
Total Gate Charge	Q_g	V_{DS} = 10V, I_D = 6A, V_{GS} = 4.5V	--	6.8	--	nC
Gate-Source Charge	Q_{gs}		--	0.5	--	nC
Gate-Drain Charge	Q_{gd}		--	1.8	--	nC
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 10V, I_D = 1A, V_{GS} = 4.5V, R_{GEN} = 6Ω	--	10	--	ns
Turn-on Rise Time	t_r		--	7	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	34	--	ns
Turn-Off Fall Time	t_f		--	6	--	ns
Dynamic						
Input Capacitance	C_{iss}	V_{DS}= 8V,V_{GS}=0V, f=1.0MHz	--	720	--	pF
Output Capacitance	C_{oss}		--	130	--	pF
Reverse Transfer Capacitance	C_{rss}		--	95	--	pF

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the t≤ 10s junction to ambient thermal resistance rating.

Typical Electrical and Thermal Characteristics

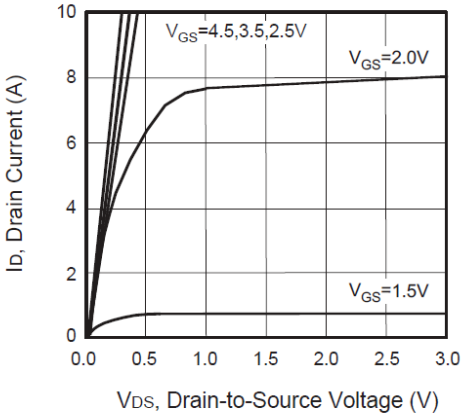


Figure 1. Output Characteristics

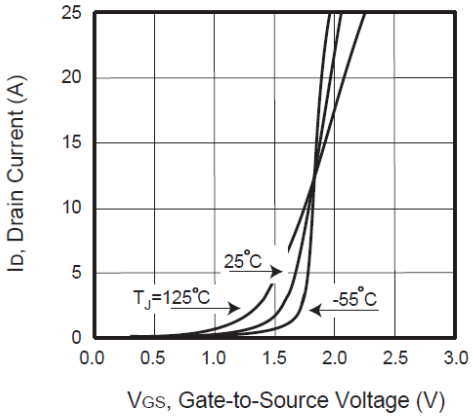


Figure 2. Transfer Characteristics

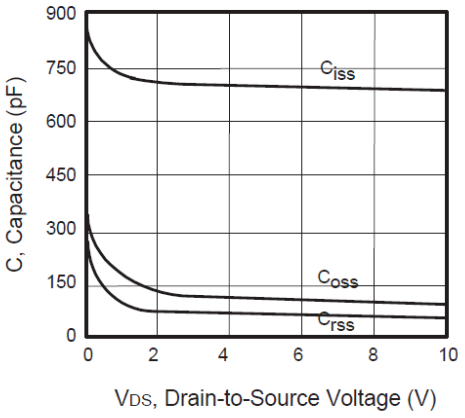


Figure 3. Capacitance

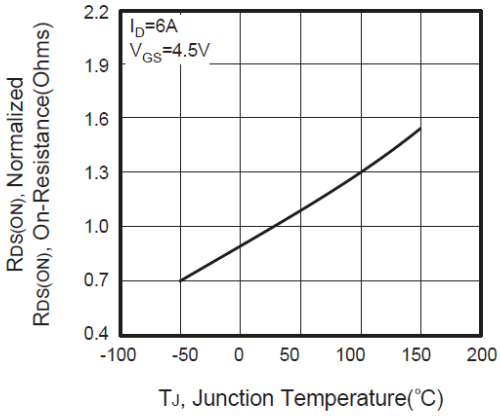


Figure 4. On-Resistance Variation with Temperature

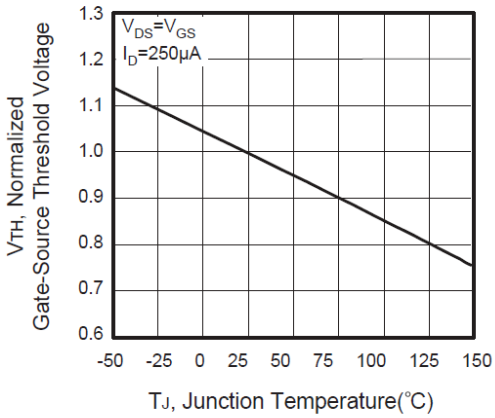


Figure 5. Gate Threshold Variation with Temperature

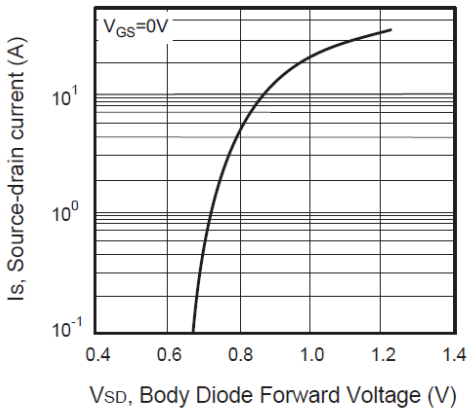


Figure 6. Body Diode Forward Voltage Variation with Source Current

Typical Electrical and Thermal Characteristics

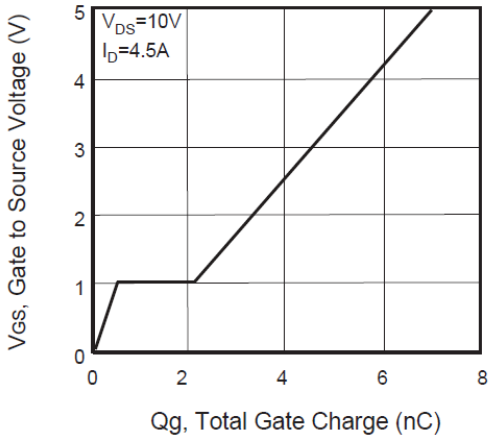


Figure 7. Gate Charge

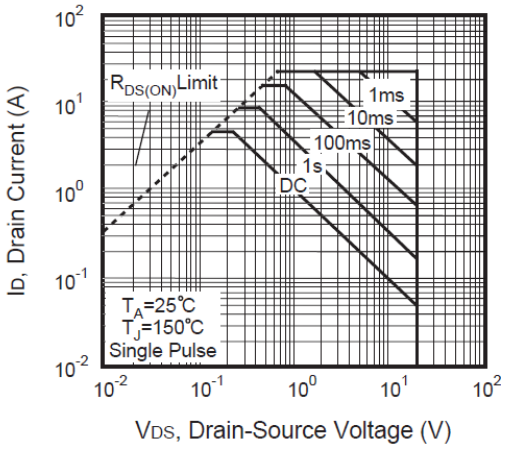


Figure 8. Maximum Safe Operating Area

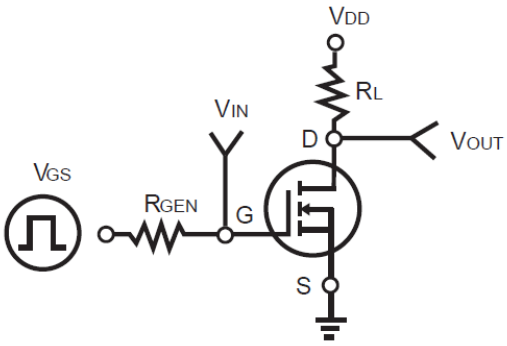


Figure 9. Switching Test Circuit

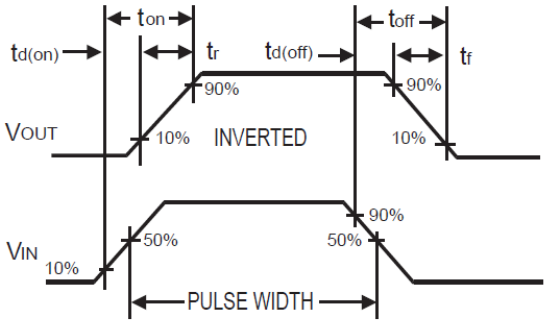


Figure 10. Switching Waveforms

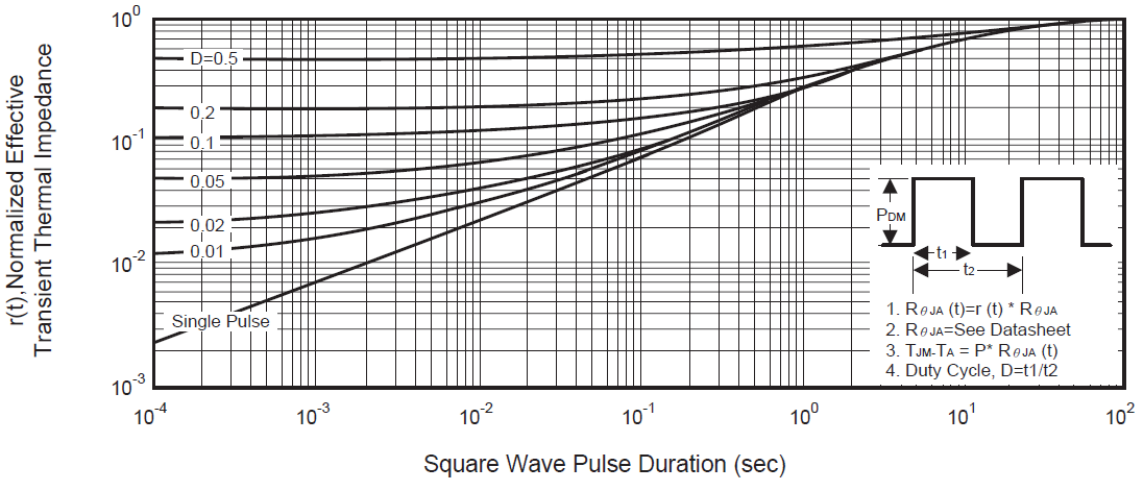
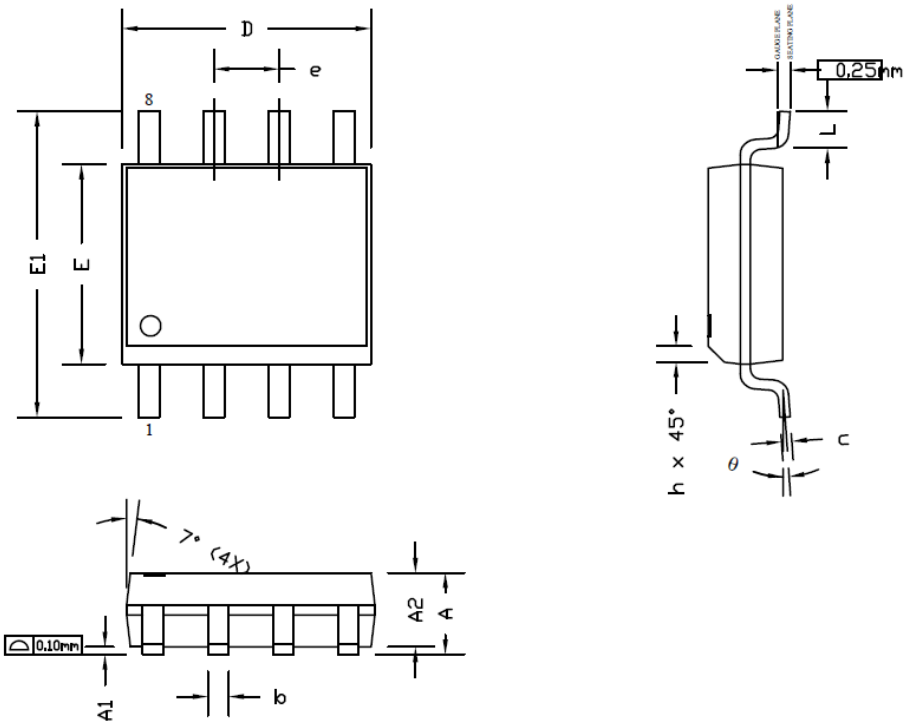
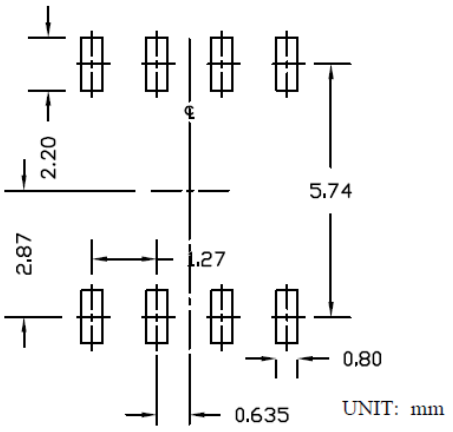


Figure 11. Normalized Thermal Transient Impedance Curve

Package Information



RECOMMENDED LAND PATTERN



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.35	1.65	1.75	0.053	0.065	0.069
A1	0.10	0.15	0.25	0.004	0.006	0.010
A2	1.25	1.50	1.65	0.049	0.059	0.065
b	0.31	0.41	0.51	0.012	0.016	0.020
c	0.17	0.20	0.25	0.007	0.008	0.010
D	4.80	4.90	5.00	0.189	0.193	0.197
E	3.80	3.90	4.00	0.150	0.154	0.157
e	1.27 BSC			0.050 BSC		
E1	5.80	6.00	6.20	0.228	0.236	0.244
h	0.25	0.30	0.50	0.010	0.012	0.020
L	0.40	0.69	1.27	0.016	0.027	0.050
θ	0°	4°	8°	0°	4°	8°

NOTE
1. ALL DIMENSIONS ARE IN MILLMETERS.
2. DIMENSIONS ARE INCLUSIVE OF PLATING.
3. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
   MOLD FLASH AT THE NON-LEAD SIDES SHOULD BE LESS THAN 6 MILS EACH.
4. DIMENSION L IS MEASURED IN GAUGE PLANE.
5. CONTROLLING DIMENSION IS MILLIMETER.
   CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.