

N-channel Enhancement Mode Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	28mΩ@10V	8.2A
	38mΩ@4.5V	

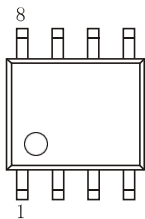
FEATURE

- TrenchFET Power MOSFET
- Low $R_{DS(on)}$
- Low Gate Charge

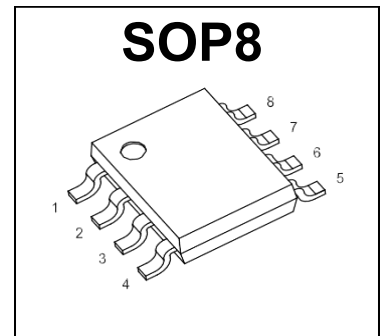
APPLICATION

- Load Switch
- PWM applications

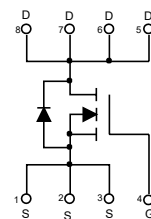
MARKING



4438 = Device code.
 Solid dot = Green molding compound device,
 if none, the normal device.
 XX = Code.



Equivalent Circuit



MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D ①	8.2	A
Pulsed Drain Current	I_{DM} ②	40	A
Power Dissipation	P_D ⑤	2.5	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$ ⑤	50	$^{\circ}\text{C/W}$
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150	$^{\circ}\text{C}$

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MOSFET ELECTRICAL CHARACTERISTICS (T_a=25 °C unless otherwise specified)

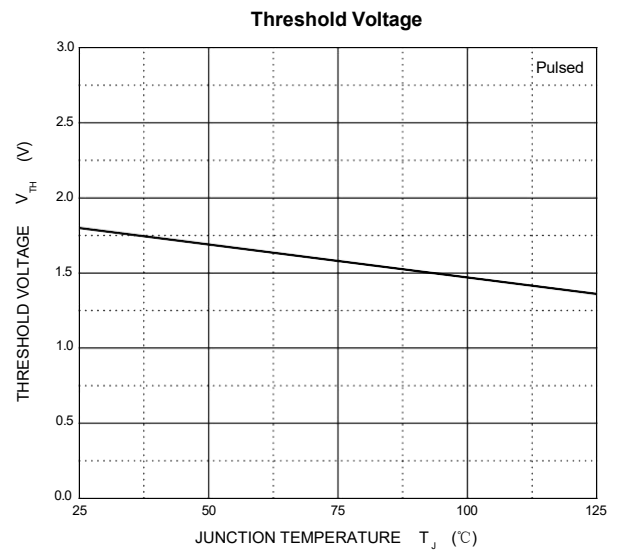
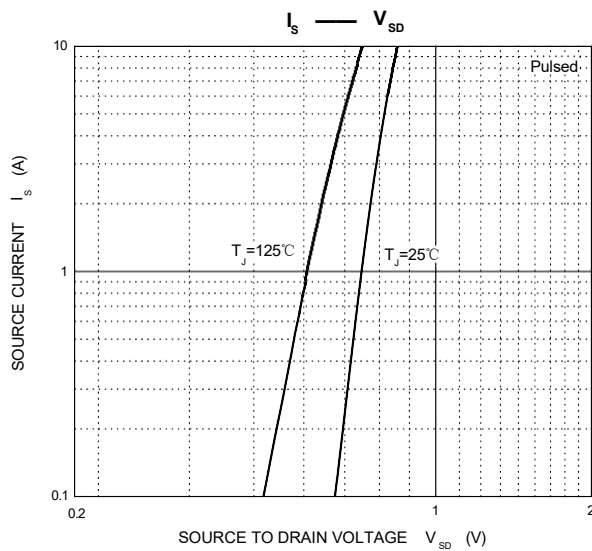
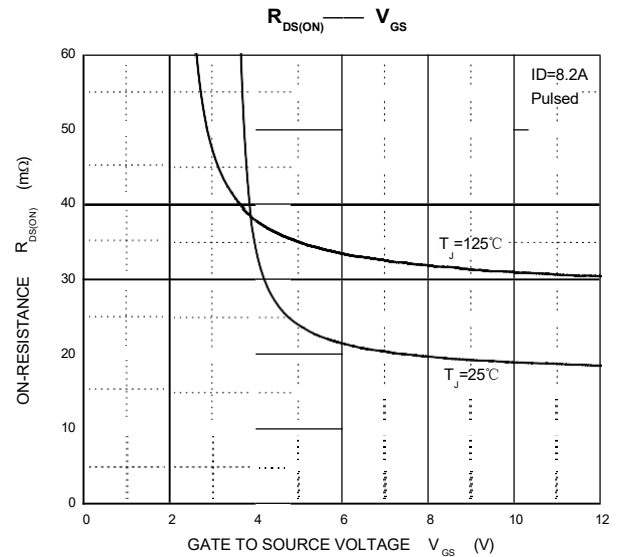
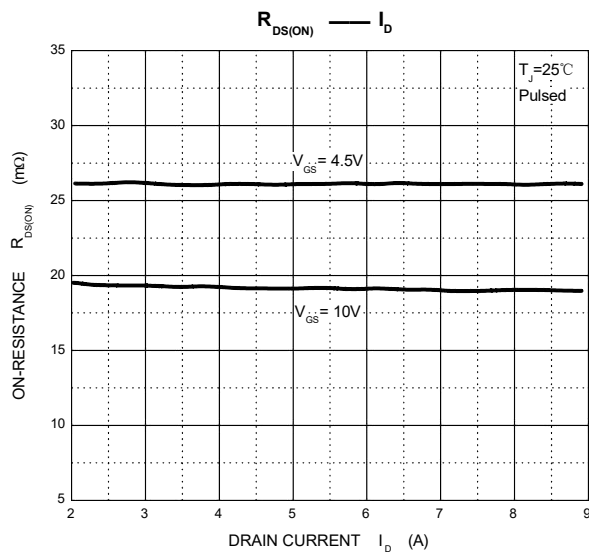
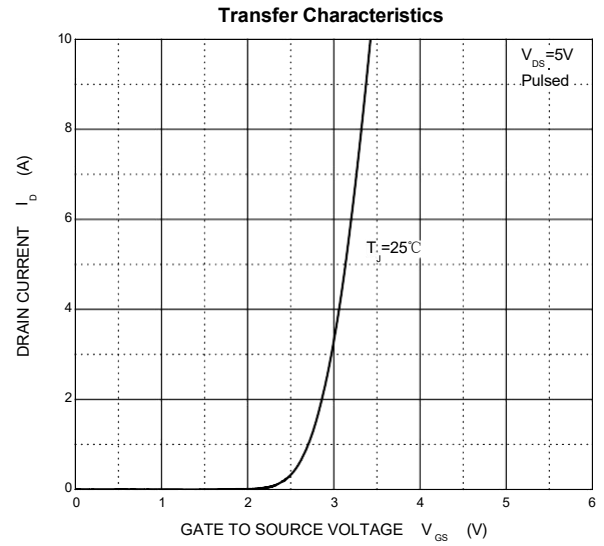
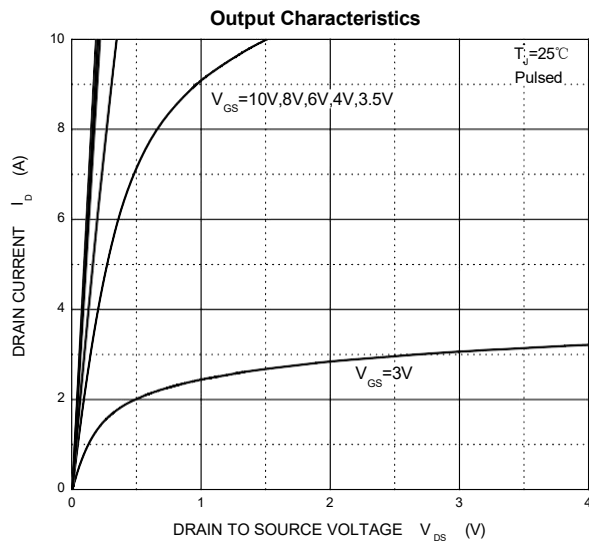
Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
Off characteristics							
Drain-source breakdown voltage	$V_{(BR) DSS}$	$V_{GS} = 0V, I_D = 250\mu A$		60			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 48V,$	$T_J = 25^{\circ}C$			1.0	μA
		$V_{GS} = 0V$	$T_J = 125^{\circ}C$			100	
Gate-body leakage current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$				± 100	nA
On characteristics ③							
Gate-threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$		1.0	1.8	3.0	V
Static drain-source on-sate resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 8.2A$			24	28	mΩ
		$V_{GS} = 4.5V, I_D = 7.6A$			33	38	mΩ
Forward transconductance	g_{FS}	$V_{DS} = 5V, I_D = 8.2A$			15		S
Dynamic characteristics ③④							
Input capacitance	C_{iss}	$V_{DS} = 30V, V_{GS} = 0V,$ $f = 1MHz$			820	1640	pF
Output capacitance	C_{oss}				93	186	
Reverse transfer capacitance	C_{rss}				69	138	
Gate resistance	R_g	$f = 1MHz$			3.8		Ω
Switching characteristics ③④							
Total gate charge	Q_g	$V_{GS} = 10V,$ $V_{DS} = 30V, I_D = 6A$			21	42	nC
Gate-source charge	Q_{gs}				2.0	4.0	
Gate-drain charge	Q_{gd}				6.6	13	
Turn-on delay time	$t_{d(on)}$	$V_{DS} = 30V, R_L = 3.6\Omega,$ $V_{GS} = 10V, R_G = 3\Omega$			8.2		ns
Turn-on rise time	t_r				5.5		
Turn-off delay time	$t_{d(off)}$				30		
Turn-off fall time	t_f				5.2		
Drain-Source Diode Characteristics							
Drain-source diode forward voltage	V_{SD} ③	$V_{GS} = 0V, I_S = 1A$				1.0	V
Continuous drain-source diode forward current	I_S ①					8.2	A
Pulsed drain-source diode forward current	I_{SM} ②					40	A

Notes:

- T_C =25°C Limited only by maximum temperature allowed.
- P_W ≤10μs, Duty cycles ≤1%.
- Pulse Test : Pulse Width ≤300μs, duty cycle ≤2%.
- Guaranteed by design, not subject to production.
- The value of R_{θJA} is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_a =25°C, t ≤10sec.

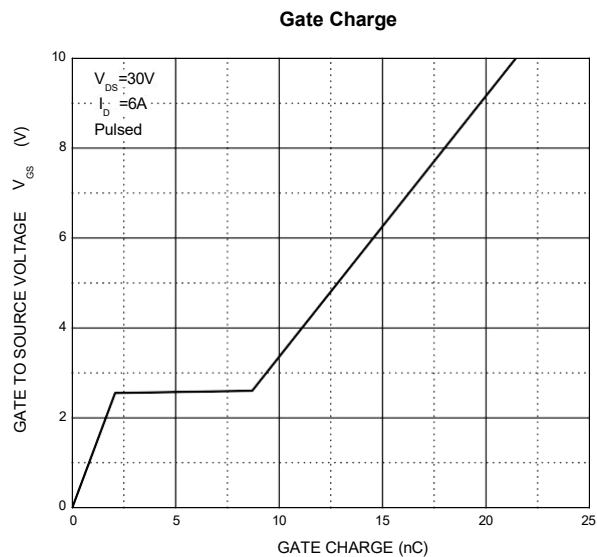
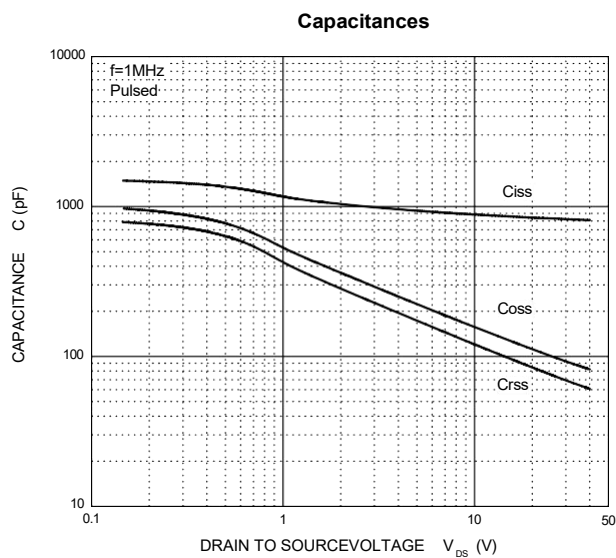
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Typical Characteristics



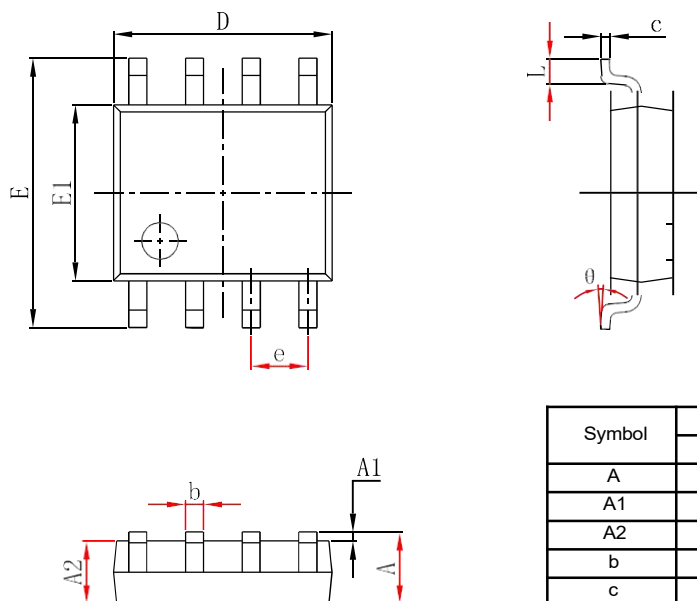
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Typical Characteristics



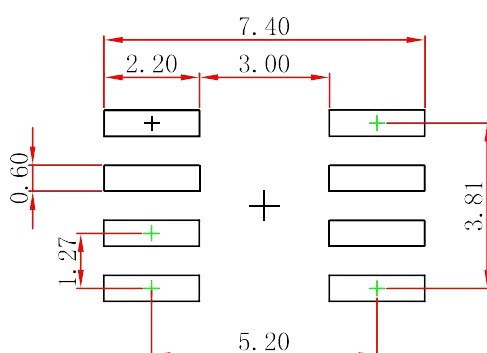
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SOP8 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.450	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.700	5.100	0.185	0.201
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

SOP8 Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.