

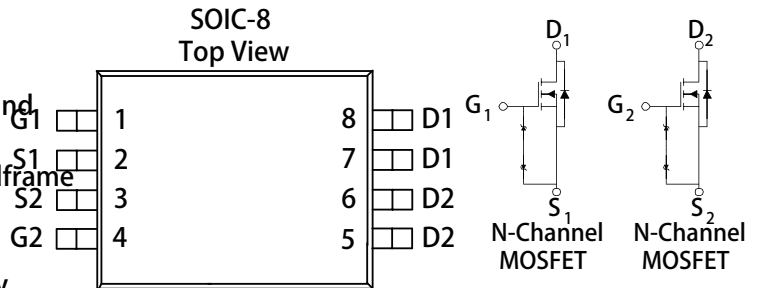
N-Channel 60-V (D-S) MOSFET

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $r_{DS(on)}$ and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

PRODUCT SUMMARY

V_{DS} (V)	$r_{DS(on)}$ m(Ω)	I_D (A)
60	35 @ $V_{GS} = 10V$	± 6.4
	45 @ $V_{GS} = 4.5V$	± 5.6

- Low $r_{DS(on)}$ provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe SOIC-8 saves board space
- Fast switching speed
- High performance trench technology



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	$T_A = 25^\circ\text{C}$	I_D	± 6.4	A
	$T_A = 70^\circ\text{C}$		± 5.2	
Pulsed Drain Current		I_{DM}	± 40	
Continuous Source Current (Diode Conduction)		I_S	2	A
Power Dissipation	$T_A = 25^\circ\text{C}$	P_D	2.1	W
	$T_A = 70^\circ\text{C}$		1.3	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Maximum	Units
Maximum Junction-to-Ambient	$t \leq 10 \text{ sec}$	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
	Steady State		110	$^\circ\text{C/W}$

Notes

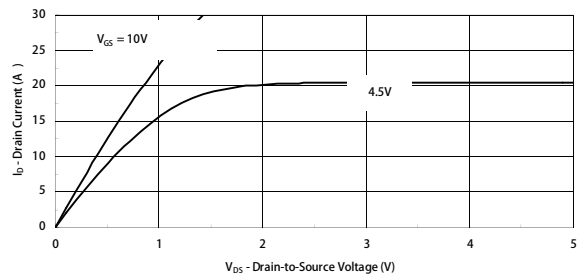
- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature

SPECIFICATIONS (T _A = 25°C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 uA	1			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = 20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0V			1	uA
		V _{DS} = 60 V, V _{GS} = 0 V, T _J = 55°C			10	
On-State Drain Current ^A	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	20			A
Drain-Source On-Resistance ^A	r _{DS(on)}	V _{GS} = 10 V, I _D = 6.4 A			35	mΩ
		V _{GS} = 4.5 V, I _D = 5.6 A			45	
Forward Tranconductance ^A	g _{fs}	V _{DS} = 15 V, I _D = 6.4 A		11		S
Diode Forward Voltage	V _{SD}	I _S = 2.0 A, V _{GS} = 0V			1.2	V
Dynamic ^b						
Total Gate Charge	Q _g	V _{DS} = 30 V, V _{GS} = 4.5 V, I _D = 6.4 A		12.5		nC
Gate-Source Charge	Q _{gs}			2.4		
Gate-Drain Charge	Q _{gd}			2.6		
Switching						
Turn-On Delay Time	t _{d(on)}	V _{DD} = 30 V, R _L = 30Ω , I _D = 1 A, V _{GEN} = 10 V		11		nS
Rise Time	t _r			8		
Turn-Off Delay Time	t _{d(off)}			19		
Fall-Time	t _f			6		

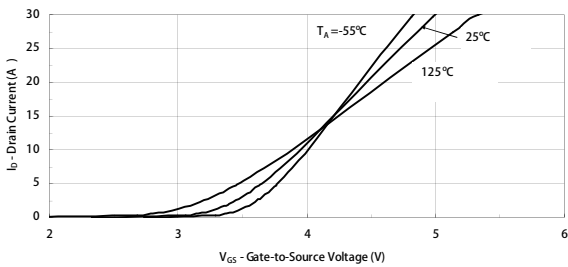
Notes

- Pulse test: PW ≤ 100 μs duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

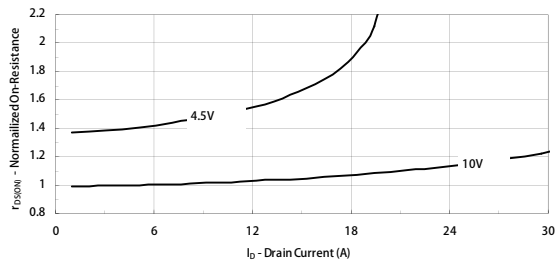
Typical Electrical Characteristics



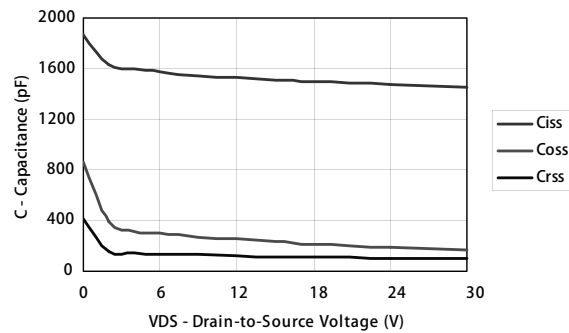
Output Characteristics



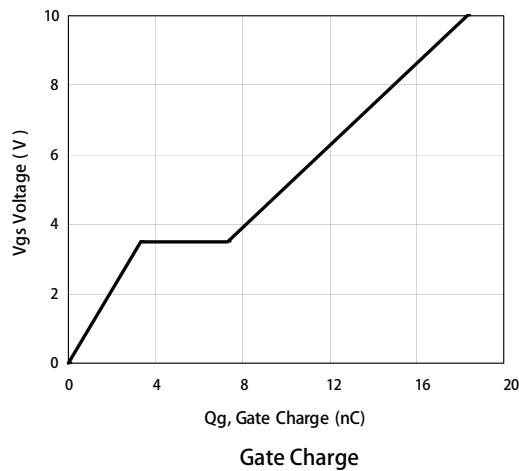
Transfer Characteristics



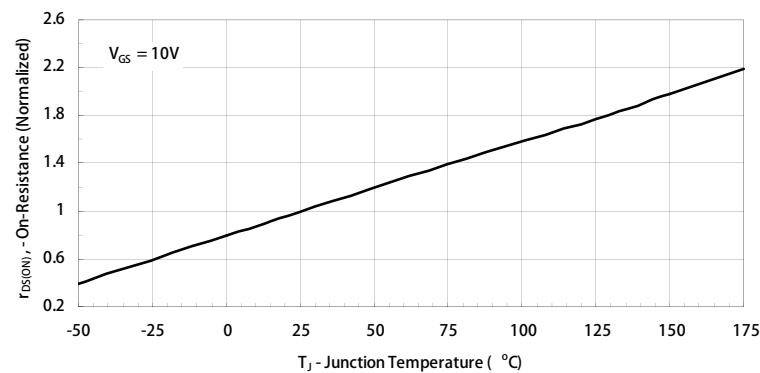
On-Resistance vs. Drain Current



Capacitance

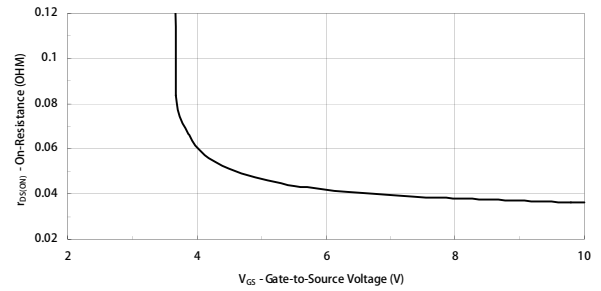
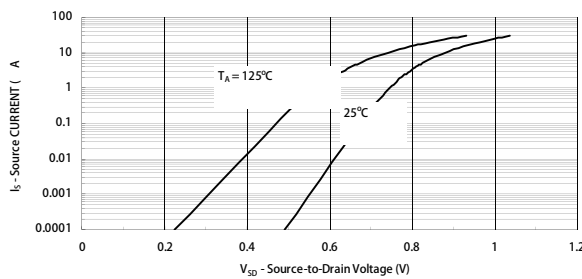


Gate Charge

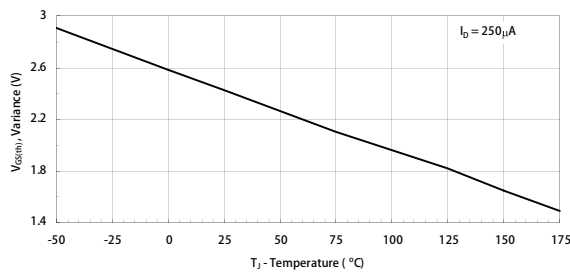


On-Resistance vs. Junction Temperature

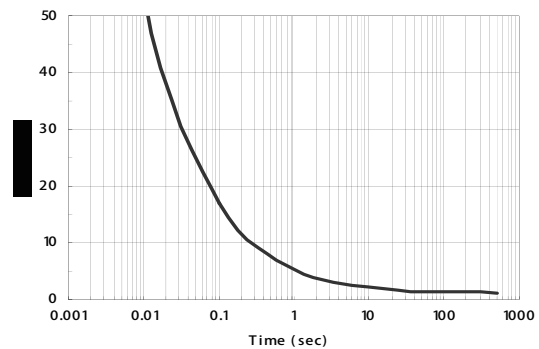
Typical Electrical Characteristics (N-Channel)



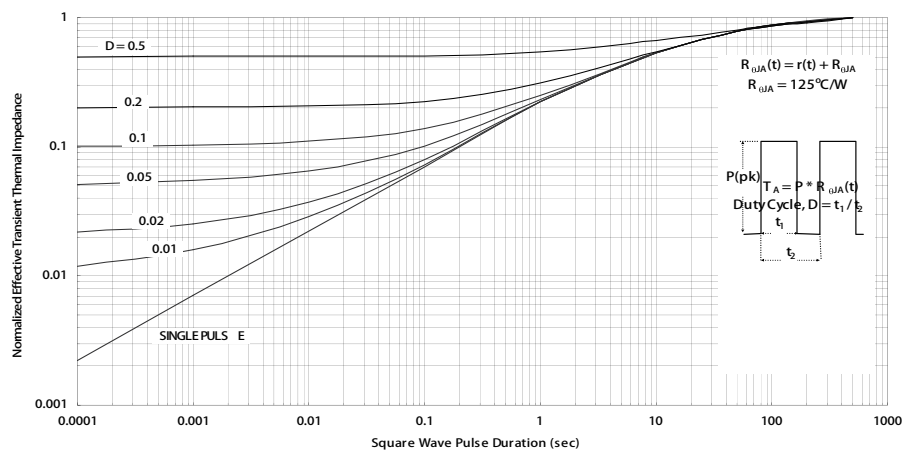
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to Source Voltage



Threshold Voltage

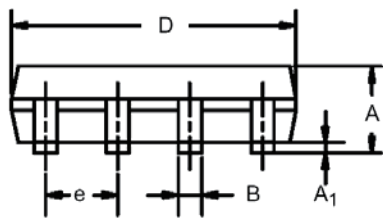
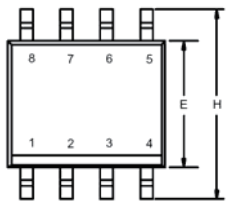


Single Pulse Power

Normalized Thermal Transient Impedance, Junction-to-Ambient

Package Information

SO-8: 8LEAD



Dim	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A ₁	0.10	0.20	0.004	0.008
B	0.35	0.51	0.014	0.020
C	0.19	0.25	0.0075	0.010
D	4.80	5.00	0.189	0.196
E	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.020
L	0.50	0.93	0.020	0.037
q	0°	8°	0°	8°

