



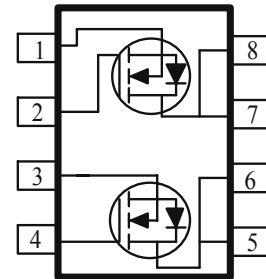
**THE DATASHEET OF
SL9945**



60V N+N-Channel Enhancement Mode 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.

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



PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ m(Ω)	I_D (A)
60	89 @ $V_{GS} = 10V$	± 3.6
	104 @ $V_{GS} = 4.5V$	± 3.4

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Limit	Units
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^a	$T_A = 25^\circ C$	± 3.6	A
	$T_A = 70^\circ C$	± 3.1	
Pulsed Drain Current ^b	I_{DM}	± 25	
Continuous Source Current (Diode Conduction) ^a	I_S	2	A
Power Dissipation ^a	$T_A = 25^\circ C$	2.1	W
	$T_A = 70^\circ C$	1.3	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ C$

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$t \leq 10$ sec	62.5	$^\circ C/W$
	$t \leq 5$ sec	110	$^\circ C/W$

Notes

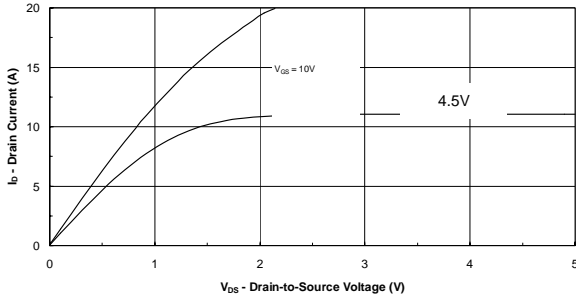
- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature

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} = 0 V			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 = 3.6 A			89	mΩ
		V _{GS} = 4.5 V, I _D = 3.4 A			104	
Forward Transconductance ^A	g _{fs}	V _{DS} = 15 V, I _D = 3.6 A		11		S
Diode Forward Voltage	V _{SD}	I _S = 2.0 A, V _{GS} = 0 V		1.1		V
Pulsed Source Current (Body Diode) ^A	I _{SM}			3.5		A
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = 30 V, V _{GS} = 4.5 V, I _D = 3.6 A		3.6		nC
Gate-Source Charge	Q _{gs}			1.8		
Gate-Drain Charge	Q _{gd}			1.3		
Switching						
Turn-On Delay Time	t _{d(on)}	V _{DD} = 30 V, R _L = 30 Ω, I _D = 1 A, V _{GEN} = 10 V		9		nS
Rise Time	t _r			10		
Turn-Off Delay Time	t _{d(off)}			21		
Fall-Time	t _f			8		

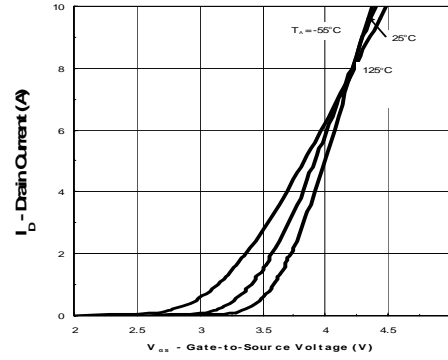
Notes

- a. Pulse test: PW ≤ 300us duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

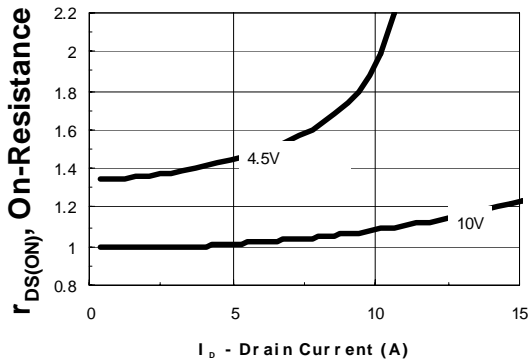
Typical Electrical Characteristics



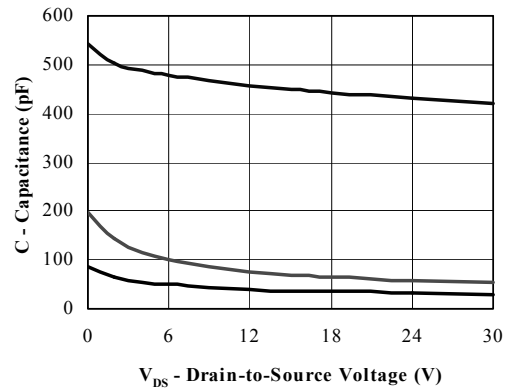
Output Characteristics



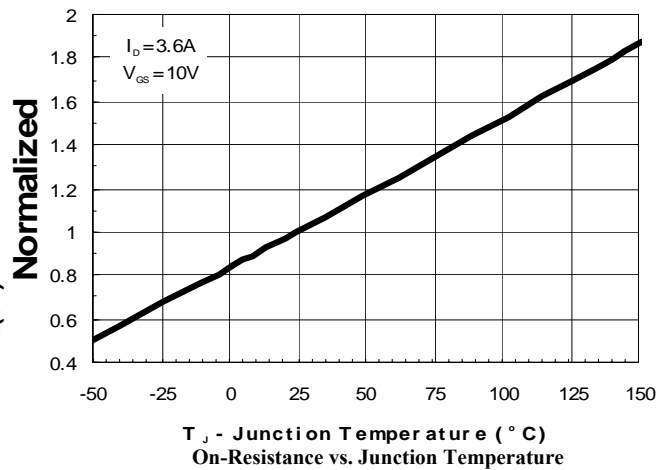
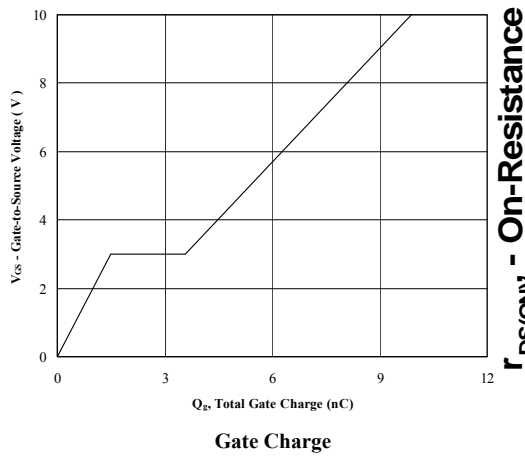
Transfer Characteristics



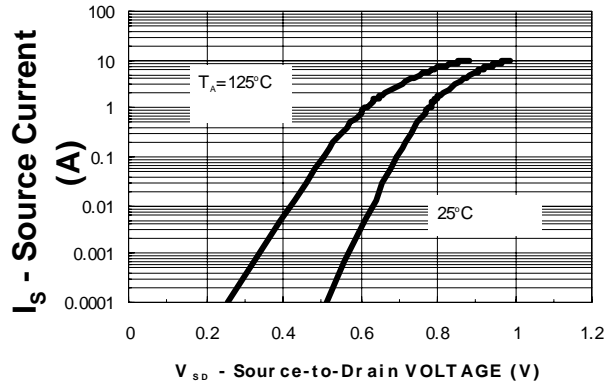
On-Resistance vs. Drain Current



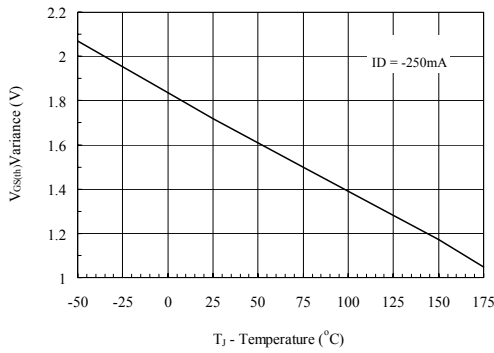
Capacitance



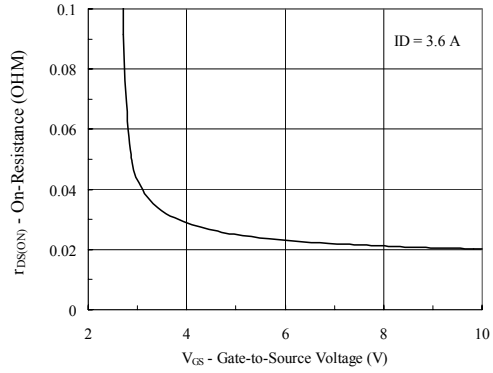
Typical Electrical Characteristics



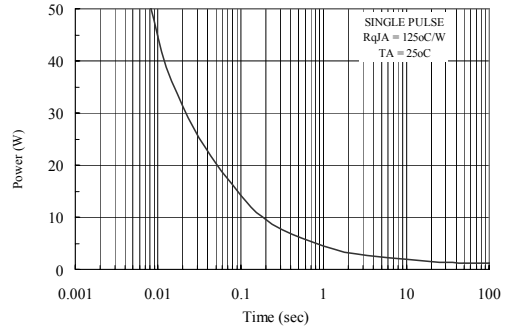
Source-Drain Diode Forward Voltage



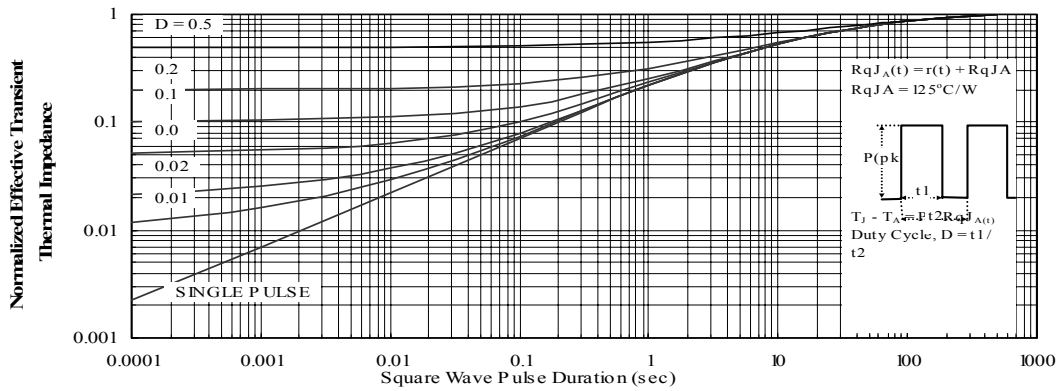
Threshold Voltage



On-Resistance vs. Gate-to-Source Voltage

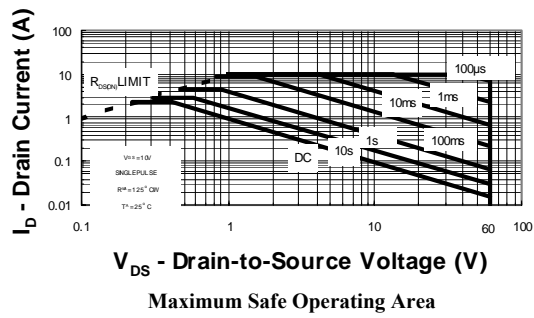


Single Pulse Power



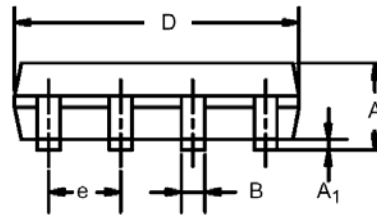
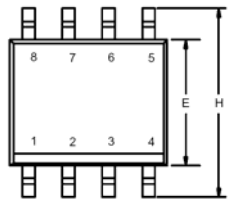
Normalized Thermal Transient Impedance, Junction-to-Ambient

Typical Electrical Characteristics

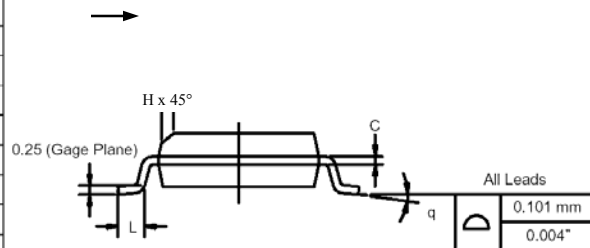


Package Information

SO-8: 8LEAD



Dim	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A₁	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°



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