



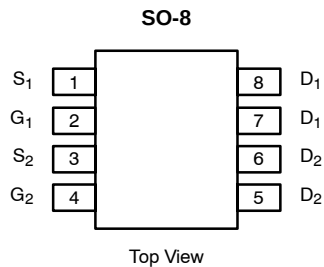
Dual P-Channel 2.5-V (G-S) MOSFET

PRODUCT SUMMARY

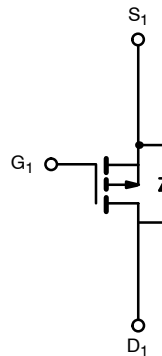
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-12	0.035 @ $V_{GS} = -4.5$ V	-6.4
	0.056 @ $V_{GS} = -2.5$ V	-5.1

FEATURES

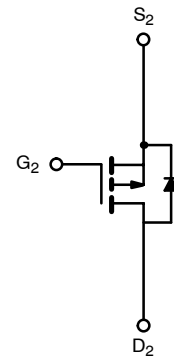
- TrenchFET® Power MOSFET



Ordering Information: Si9934BDY—E3
Si9934BDY-T1—E3 (with Tape and Reel)



P-Channel MOSFET



P-Channel MOSFET

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

Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		V _{DS}	−12		V
Gate-Source Voltage		V _{GS}	± 8		
Continuous Drain Current (T _J = 150°C) ^a	T _A = 25°C	I _D	−6.4	−4.8	A
	T _A = 70°C		−5.1	−3.9	
Pulsed Drain Current		I _{DM}	−20		
continuous Source Current (Diode Conduction) ^a		I _S	−1.7	−0.9	
Maximum Power Dissipation ^a	T _A = 25°C	P _D	2.0	1.1	W
	T _A = 70°C		1.3	0.7	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	−55 to 150		°C

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	$t \leq 10$ sec	R_{thJA}	55	62.5	$^\circ\text{C/W}$
	Steady State		90	110	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	33	40	

Notes

a. Surface Mounted on 1" x 1" FR4 Board.

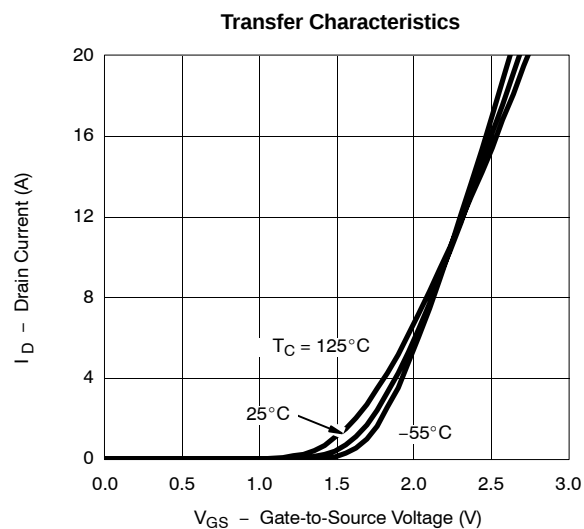
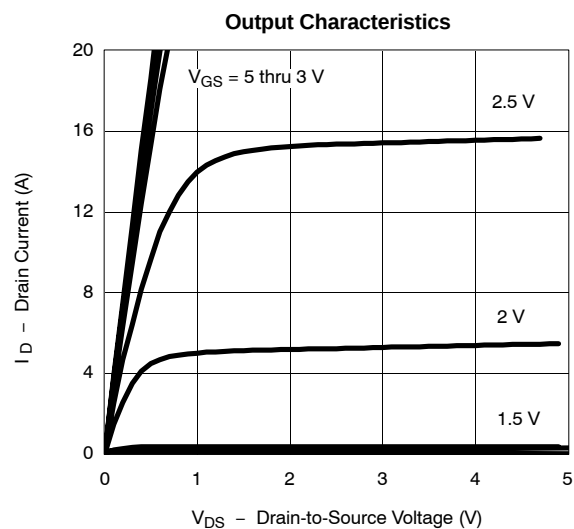
SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\ \mu\text{A}$	-0.6		-1.4	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\ \text{V}, V_{GS} = \pm 8\ \text{V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -12\ \text{V}, V_{GS} = 0\ \text{V}$			-1	μA
		$V_{DS} = -12\ \text{V}, V_{GS} = 0\ \text{V}, T_J = 55^\circ\text{C}$			-5	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} = -5\ \text{V}, V_{GS} = -4.5\ \text{V}$	-20			A
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = -4.5\ \text{V}, I_D = -6.4\ \text{A}$		0.028	0.035	Ω
		$V_{GS} = -2.5\ \text{V}, I_D = -1.8\ \text{A}$		0.044	0.056	
Forward Transconductance ^a	g_{fs}	$V_{DS} = -10\ \text{V}, I_D = -6.4\ \text{A}$		17		S
Diode Forward Voltage ^a	V_{SD}	$I_S = -1.7\ \text{A}, V_{GS} = 0\ \text{V}$		-0.8	-1.2	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = 6\ \text{V}, V_{GS} = -4.5\ \text{V}, I_D = -6.4\ \text{A}$		13	20	nC
Gate-Source Charge	Q_{gs}			2.6		
Gate-Drain Charge	Q_{gd}			4.0		
Gate Resistance	R_g			9		Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 6\ \text{V}, R_L = 6\ \Omega$ $I_D \cong -1\ \text{A}, V_{GEN} = -4.5\ \text{V}, R_g = 6\ \Omega$		19	30	ns
Rise Time	t_r			35	55	
Turn-Off Delay Time	$t_{d(off)}$			80	120	
Fall Time	t_f			50	75	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = -1.7\ \text{A}, di/dt = 100\ \text{A}/\mu\text{s}$		40	80	

Notes

a. Pulse test; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.

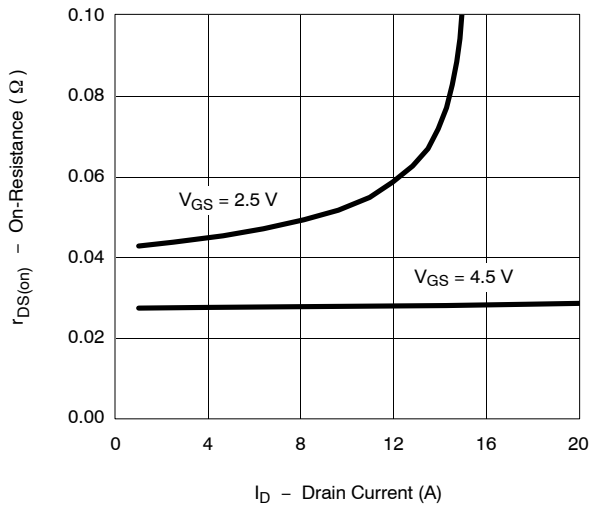
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

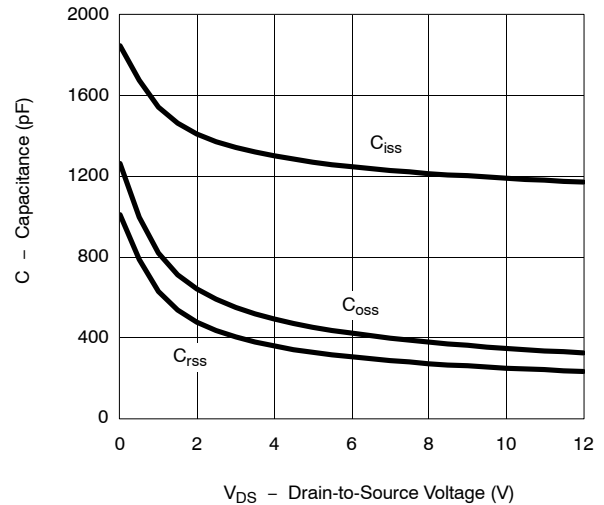


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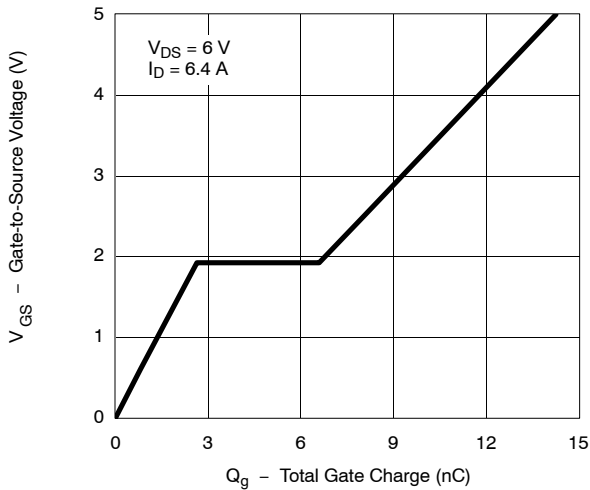
On-Resistance vs. Drain Current



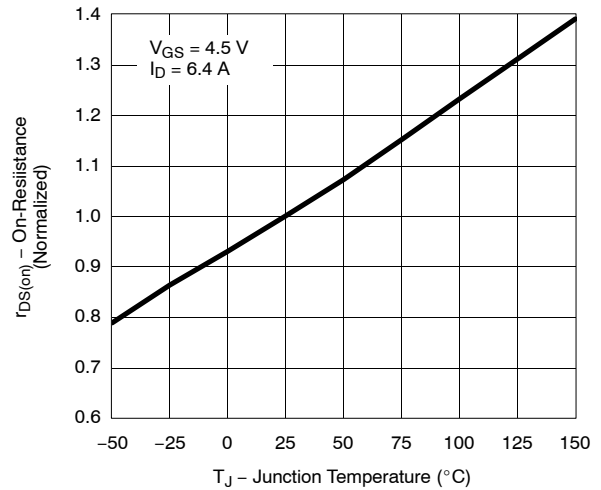
Capacitance



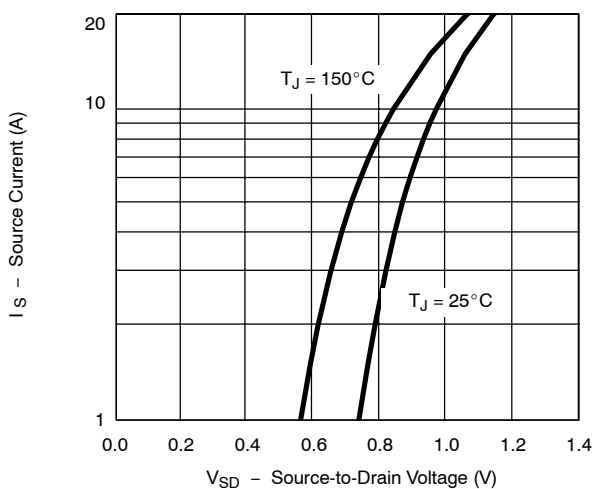
Gate Charge



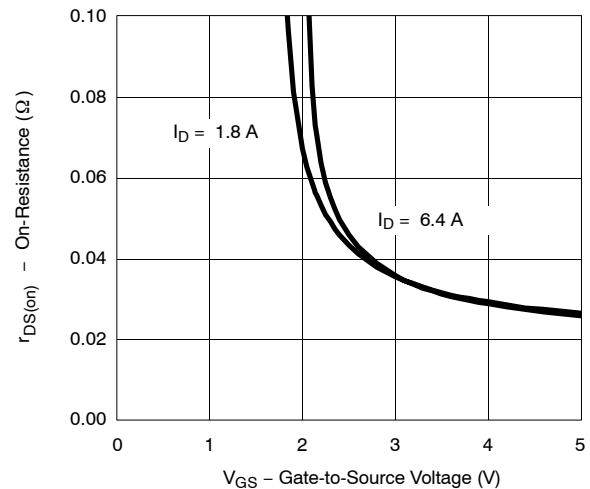
On-Resistance vs. Junction Temperature



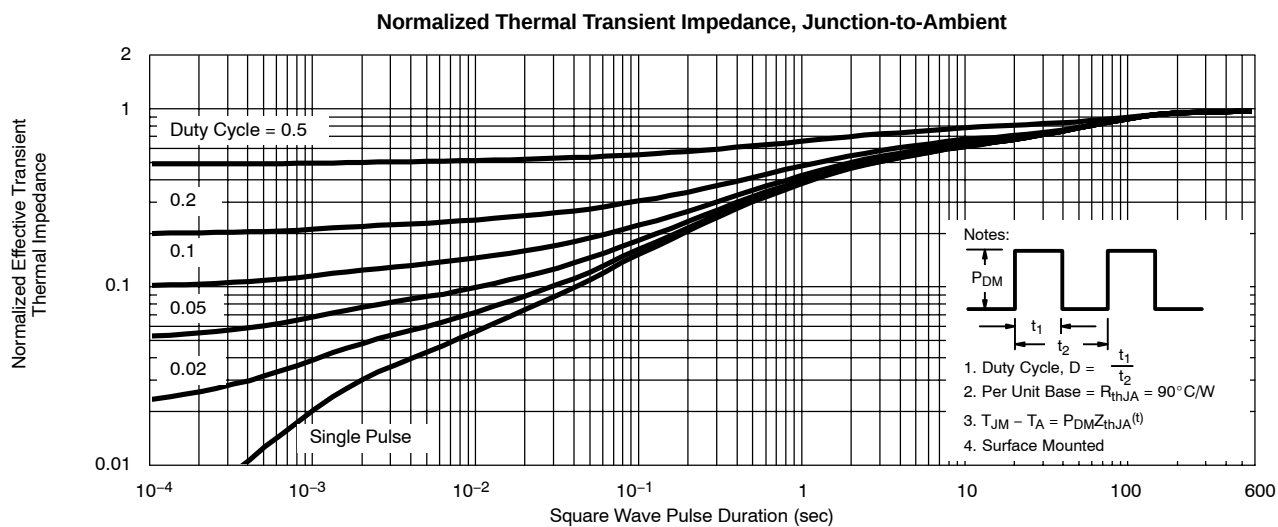
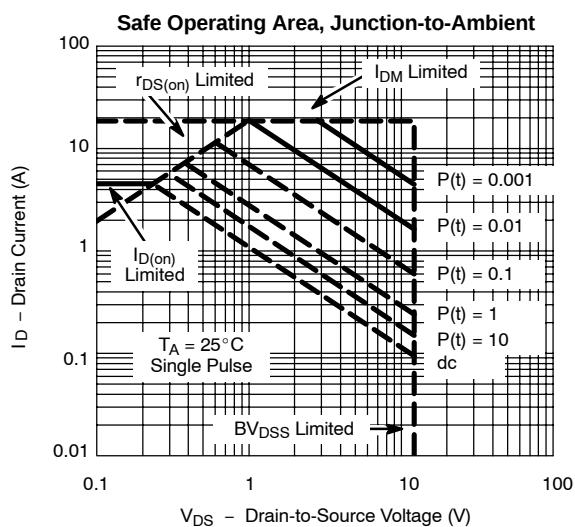
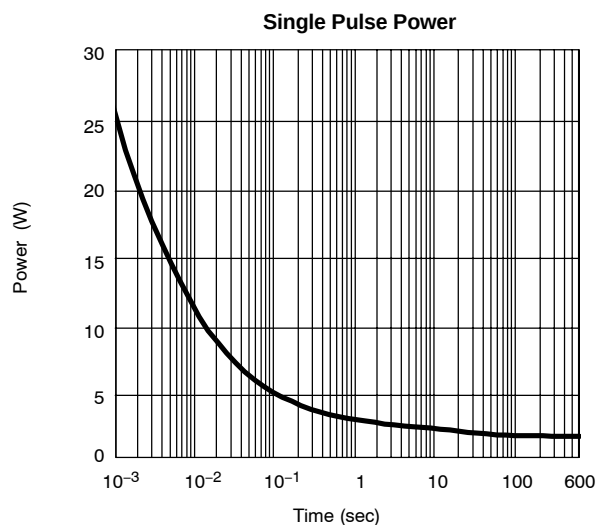
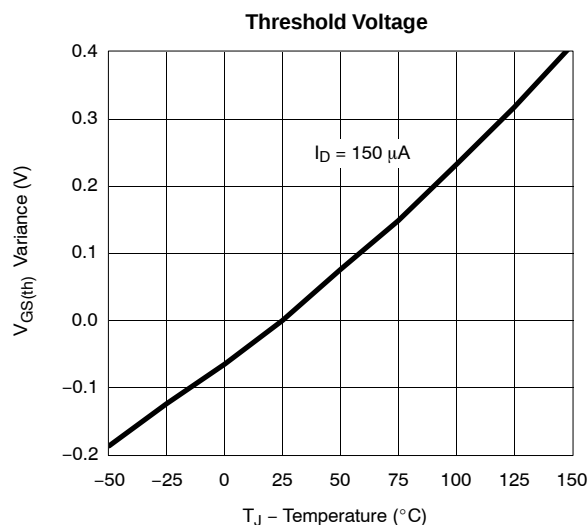
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)





TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

