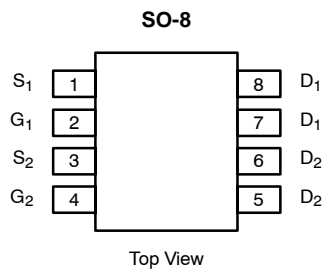


## Dual P-Channel 2.5-V (G-S) MOSFET

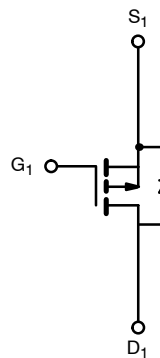
PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
-12	0.035 @ $V_{GS} = -4.5$ V	-6.4
	0.056 @ $V_{GS} = -2.5$ V	-5.1

### FEATURES

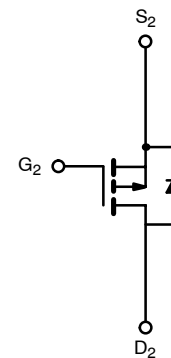
- TrenchFET® Power MOSFET



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	$V_{GS}$	$\pm 8$			
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a</sup>	$I_D$	$T_A = 25^\circ\text{C}$	-6.4	-4.8	A
		$T_A = 70^\circ\text{C}$	-5.1	-3.9	
Pulsed Drain Current	$I_{DM}$	-20			
continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	-1.7	-0.9		
Maximum Power Dissipation <sup>a</sup>	$P_D$	$T_A = 25^\circ\text{C}$	2.0	1.1	W
		$T_A = 70^\circ\text{C}$	1.3	0.7	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150		$^\circ\text{C}$	

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

Notes

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

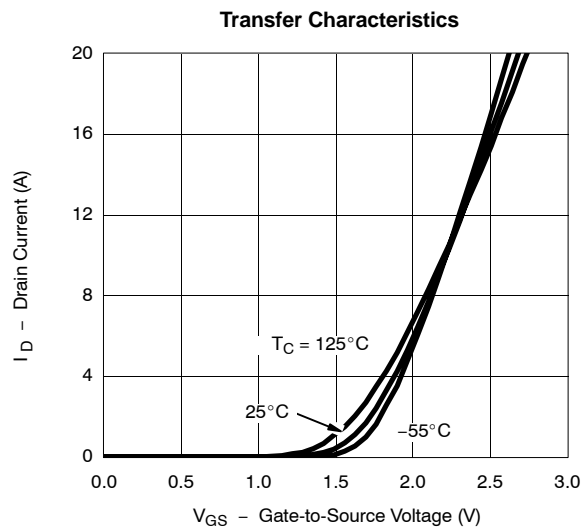
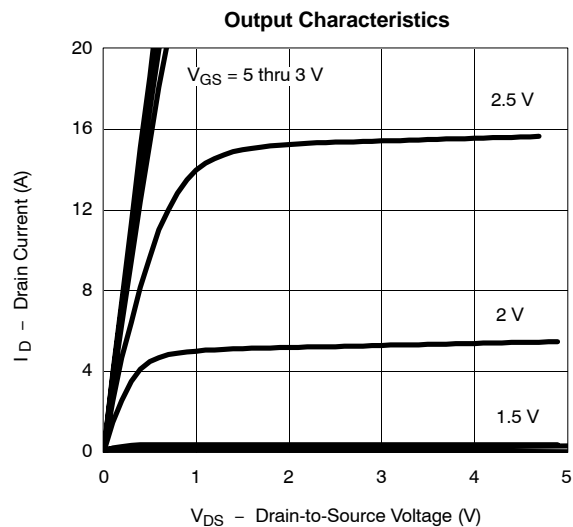
### SPECIFICATIONS ( $T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$	-0.6		-1.4	V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0\text{ V}, V_{GS} = \pm 8\text{ V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -12\text{ V}, V_{GS} = 0\text{ V}$			-1	$\mu\text{A}$
		$V_{DS} = -12\text{ V}, V_{GS} = 0\text{ V}, T_J = 55^\circ\text{C}$			-5	
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	$V_{DS} = -5\text{ V}, V_{GS} = -4.5\text{ V}$	-20			A
Drain-Source On-State Resistance <sup>a</sup>	$r_{DS(on)}$	$V_{GS} = -4.5\text{ V}, I_D = -6.4\text{ A}$		0.028	0.035	$\Omega$
		$V_{GS} = -2.5\text{ V}, I_D = -1.8\text{ A}$		0.044	0.056	
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = -10\text{ V}, I_D = -6.4\text{ A}$		17		S
Diode Forward Voltage <sup>a</sup>	$V_{SD}$	$I_S = -1.7\text{ A}, V_{GS} = 0\text{ V}$		-0.8	-1.2	V
<b>Dynamic<sup>b</sup></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		$\Omega$
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.

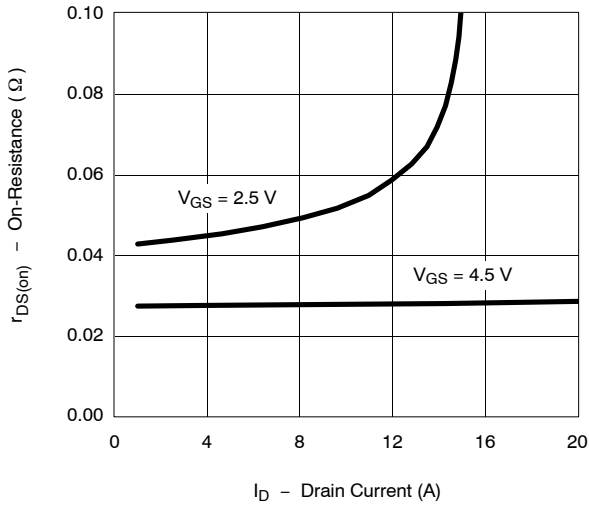
### TYPICAL CHARACTERISTICS ( $25^\circ\text{C}$ UNLESS NOTED)



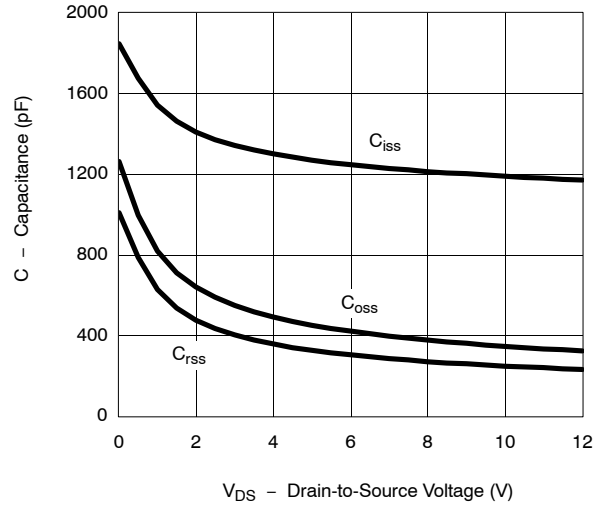


**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**

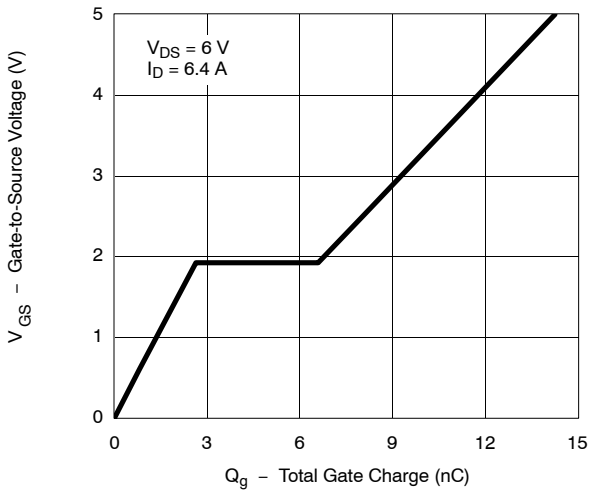
**On-Resistance vs. Drain Current**



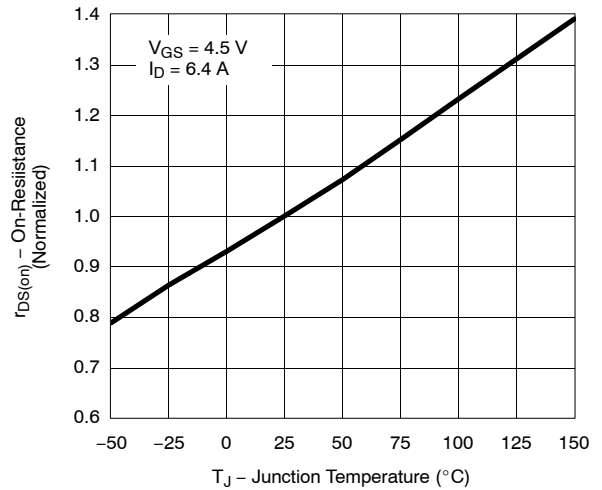
**Capacitance**



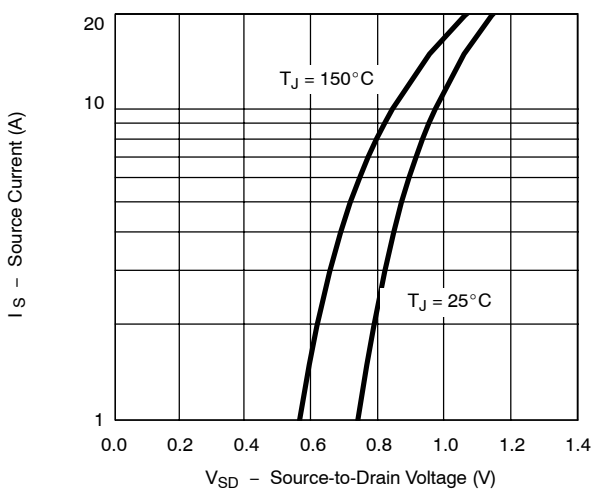
**Gate Charge**



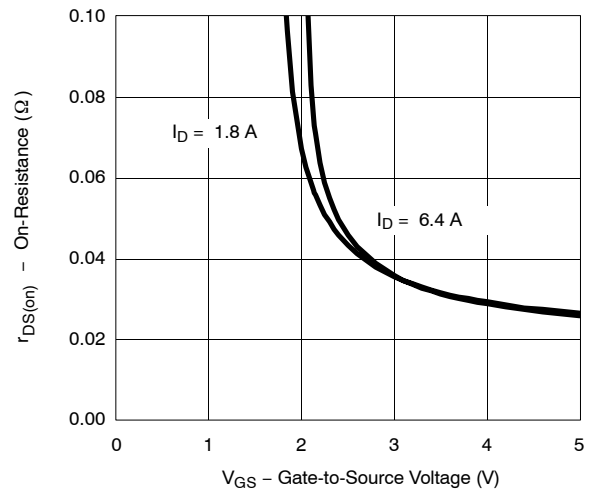
**On-Resistance vs. Junction Temperature**



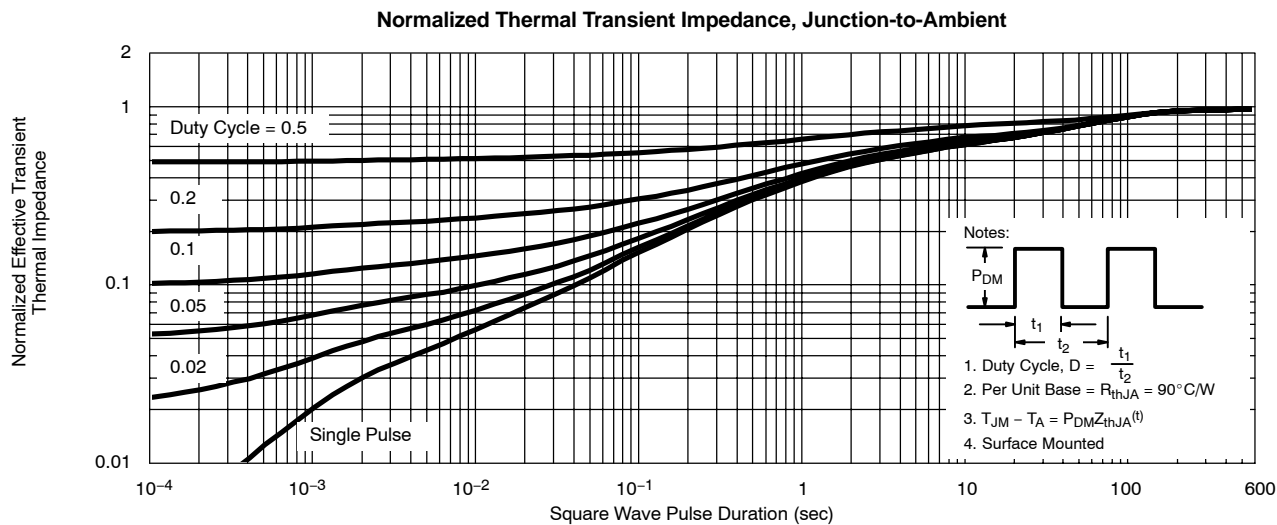
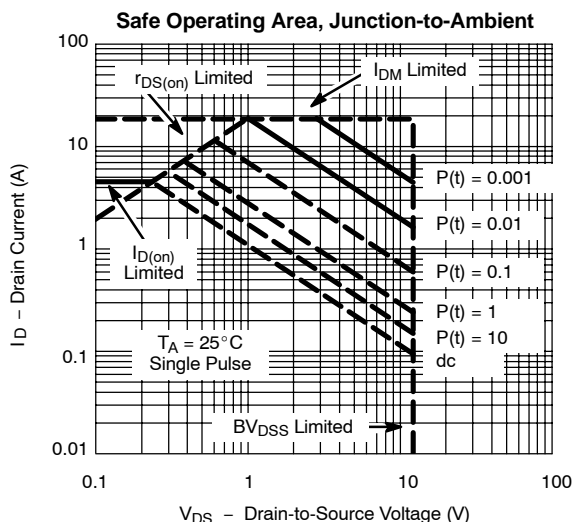
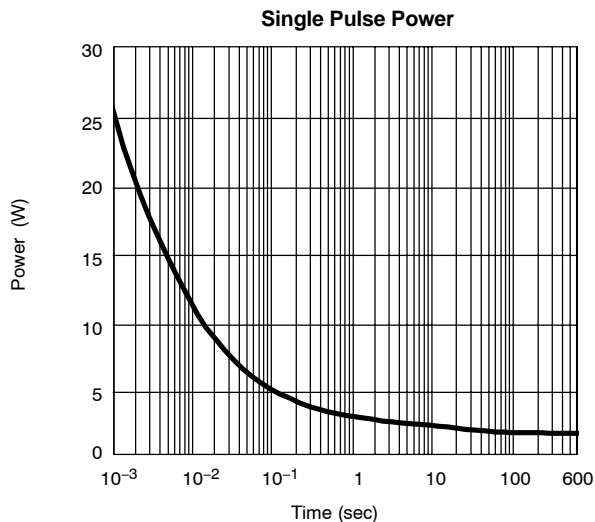
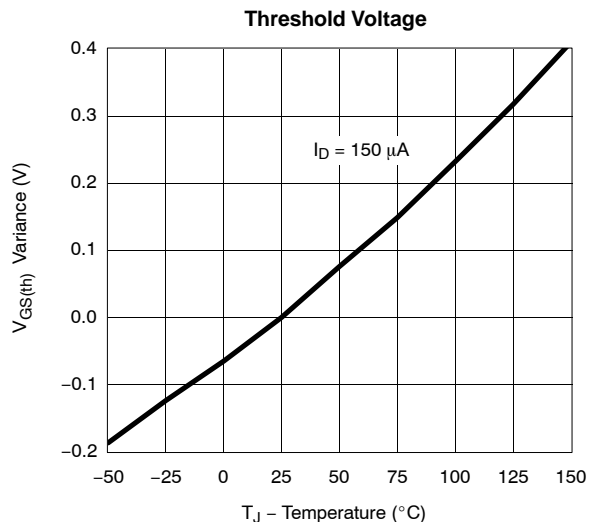
**Source-Drain Diode Forward Voltage**



**On-Resistance vs. Gate-to-Source Voltage**



**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**





**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

