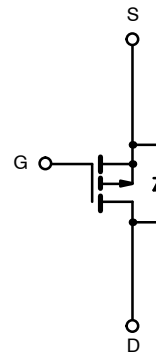
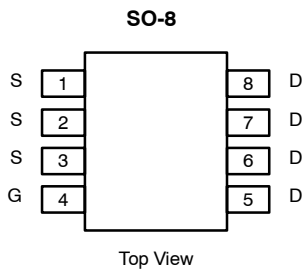




P-Channel 20-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-20	0.040 @ $V_{GS} = -4.5$ V	-6.2
	0.060 @ $V_{GS} = -2.7$ V	-5.0



Ordering Information: Si9433BDY—E3 (Lead Free)
Si9433BDY-T1—E3 (Lead Free with Tape and Reel)

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}	-20		V	
Gate-Source Voltage	V_{GS}	± 12			
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	I_D	$T_A = 25^\circ\text{C}$	-6.2	-4.5	A
		$T_A = 70^\circ\text{C}$	-5.0	-3.5	
Pulsed Drain Current	I_{DM}	-20			
Continuous Source Current (Diode Conduction) ^a	I_S	-2.3	-1.2		
Maximum Power Dissipation ^a	P_D	$T_A = 25^\circ\text{C}$	2.5	1.3	W
		$T_A = 70^\circ\text{C}$	1.6	0.8	
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 ^a	R_{thJA}	$t \leq 10$ sec	45	50	$^\circ\text{C/W}$
		Steady State	80	95	
Maximum Junction-to-Foot (Drain)	R_{thJF}	20	24		

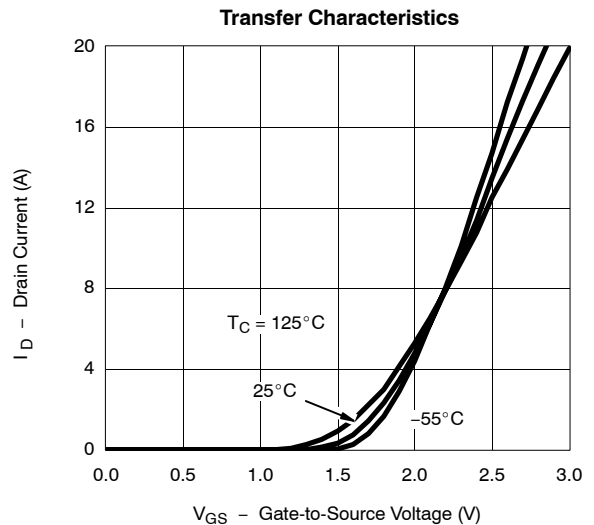
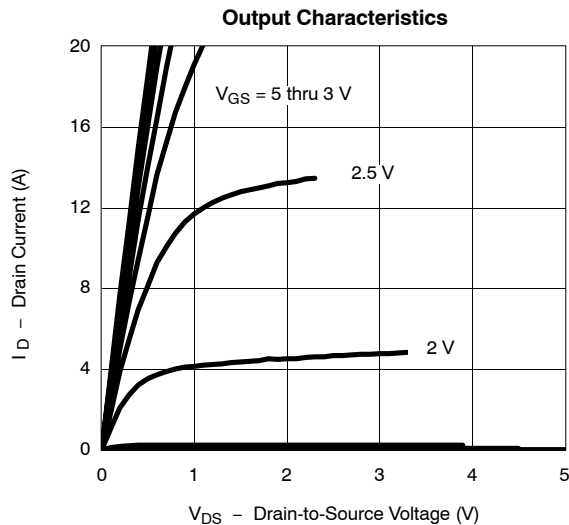
Notes
a. Surface Mounted on FR4 Board, $t \leq 10$ sec.



SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	-0.6		-1.5	V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±12 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -20 V, V _{GS} = 0 V			-1	μA
		V _{DS} = -20 V, V _{GS} = 0 V, T _J = 70 °C			-10	
On-State Drain Current ^b	I _{D(on)}	V _{DS} ≤ -5 V, V _{GS} = -4.5 V	-20			A
		V _{DS} ≤ -5 V, V _{GS} = -2.7 V	-5			
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = -4.5 V, I _D = -6.2 A		0.030	0.040	Ω
		V _{GS} = -2.7 V, I _D = -5.0 A		0.050	0.060	
Forward Transconductance ^b	g _{fs}	V _{DS} = -9 V, I _D = -6.2 A		15		S
Diode Forward Voltage ^b	V _{SD}	I _S = -2.6 A, V _{GS} = 0 V		-0.76	-1.1	V
Dynamic^a						
Total Gate Charge	Q _g	V _{DS} = -6 V, V _{GS} = -4.5 V, I _D = -6.2 A		8.8	14	nC
Gate-Source Charge	Q _{gs}			1.8		
Gate-Drain Charge	Q _{gd}			2.4		
Gate Resistance	R _g			8.5		Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = -6 V, R _L = 6 Ω I _D = -1 A, V _{GEN} = -4.5 V, R _g = 6 Ω		40	60	ns
Rise Time	t _r			55	85	
Turn-Off Delay Time	t _{d(off)}			65	100	
Fall Time	t _f			30	45	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = -2.3 A, di/dt = 100 A/μs		35	55	

- Notes
 a. For design aid only; not subject to production testing.
 b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.

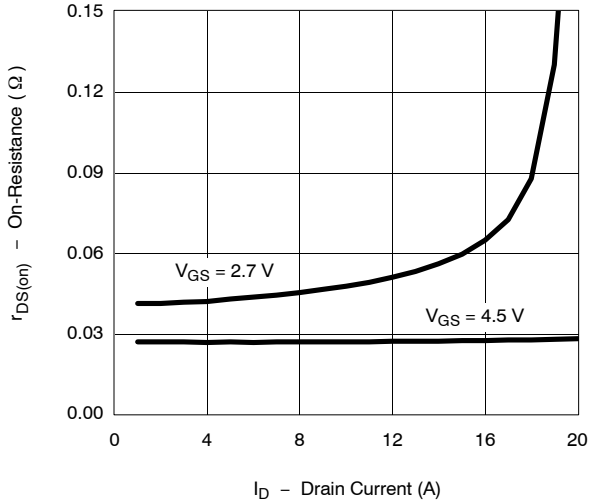
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



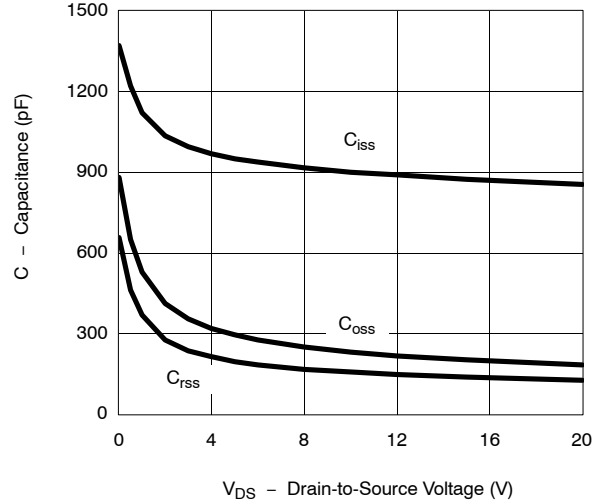


TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

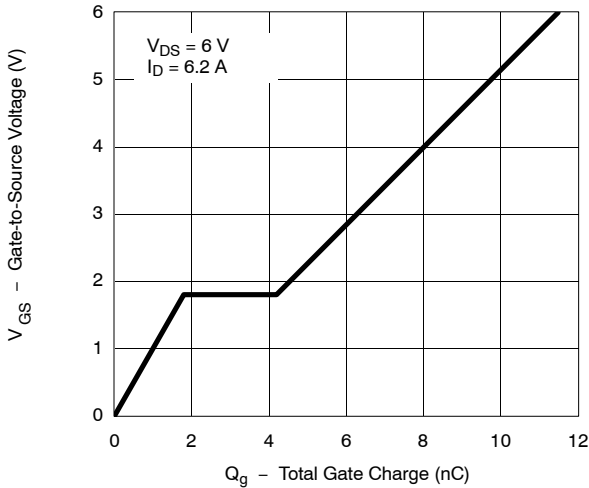
On-Resistance vs. Drain Current



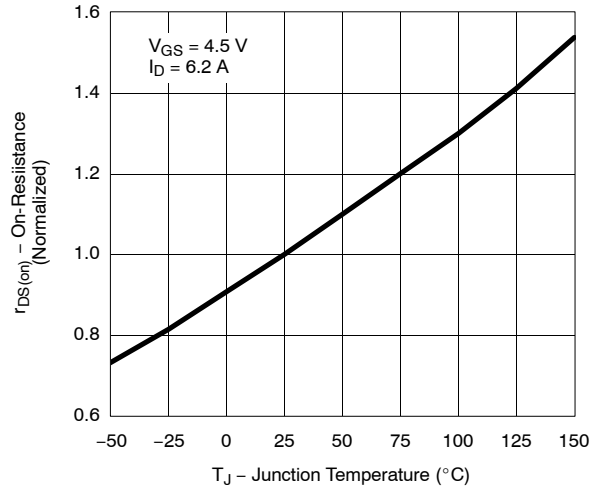
Capacitance



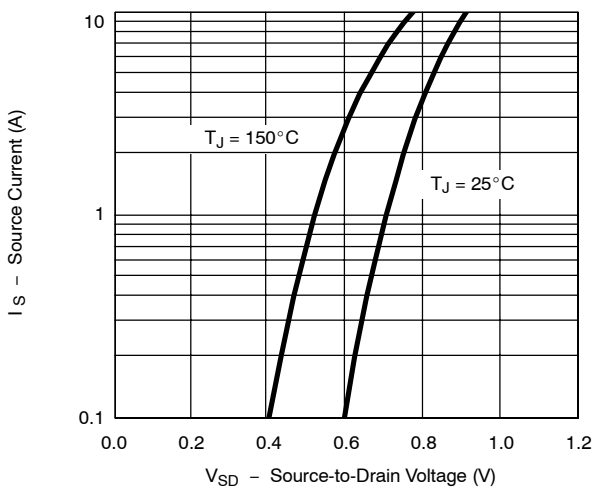
Gate Charge



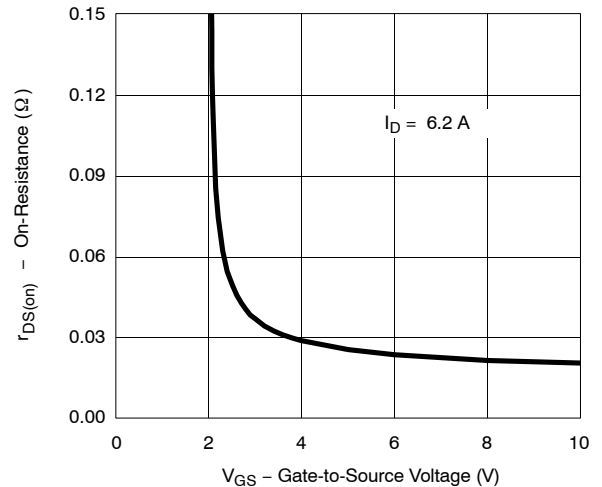
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

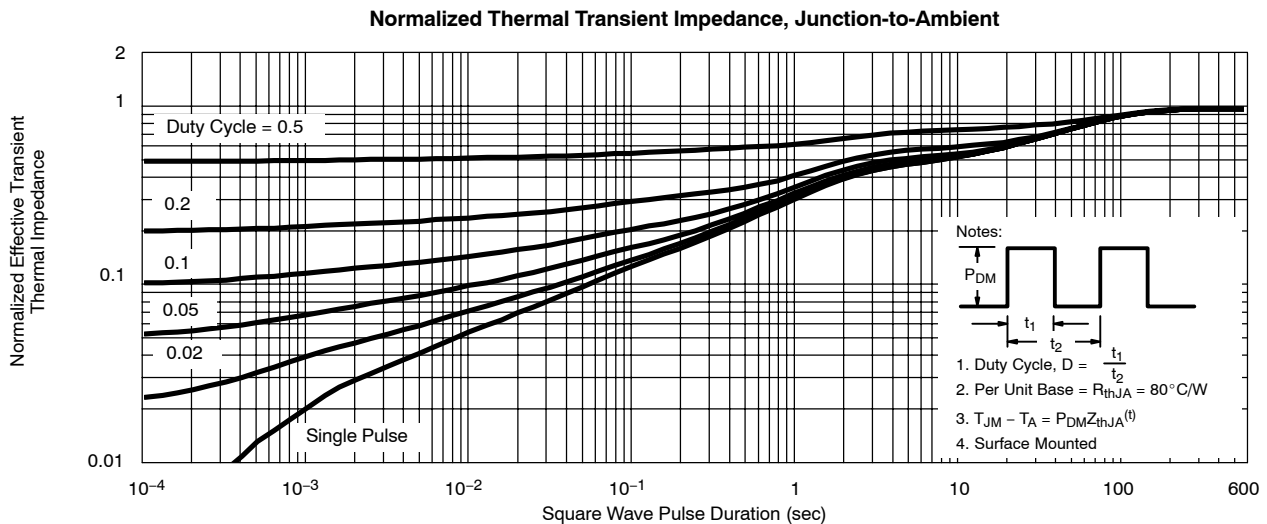
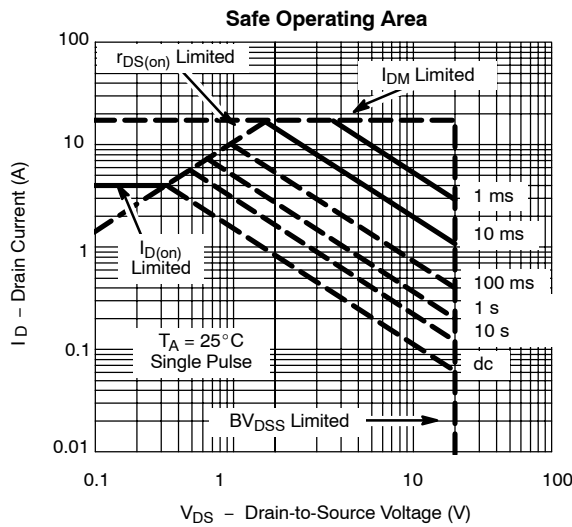
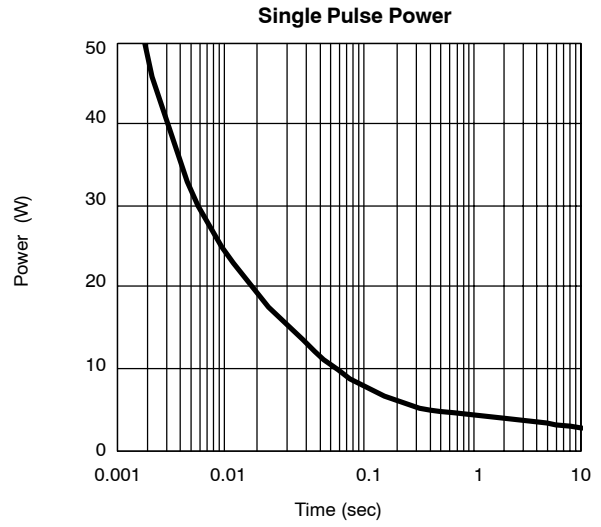
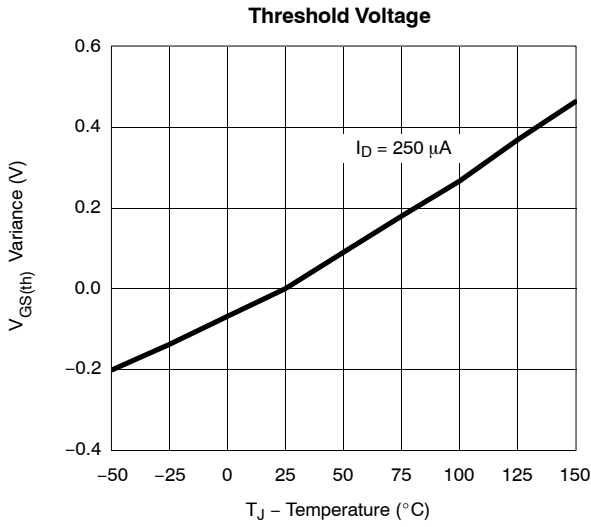


On-Resistance vs. Gate-to-Source Voltage





TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)





TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

