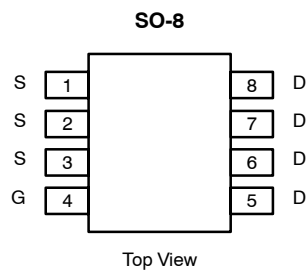


P-Channel 30-V (D-S) MOSFET

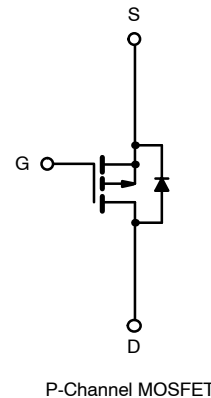
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-30	0.042 @ $V_{GS} = -10$ V	-5.7
	0.055 @ $V_{GS} = -6$ V	-5.0
	0.070 @ $V_{GS} = -4.5$ V	-4.4

FEATURES

- TrenchFET® Power MOSFET



Ordering Information: Si9435BDY
Si9435BDY-T1 (with Tape and Reel)



ABSOLUTE MAXIMUM RATINGS (T _A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		V _{DS}	−30		V
Gate-Source Voltage		V _{GS}	± 20		
Continuous Drain Current (T _J = 150°C) ^a	T _A = 25°C	I _D	−5.7	−4.1	A
	T _A = 70°C		−4.6	−3.2	
Pulsed Drain Current		I _{DM}	−30		
continuous Source Current (Diode Conduction) ^a		I _S	−2.3	−1.1	
Maximum Power Dissipation ^a	T _A = 25°C	P _D	2.5	1.3	W
	T _A = 70°C		1.6	0.8	
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}	40	50	$^\circ\text{C/W}$
	Steady State		70	95	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	24	30	

Notes

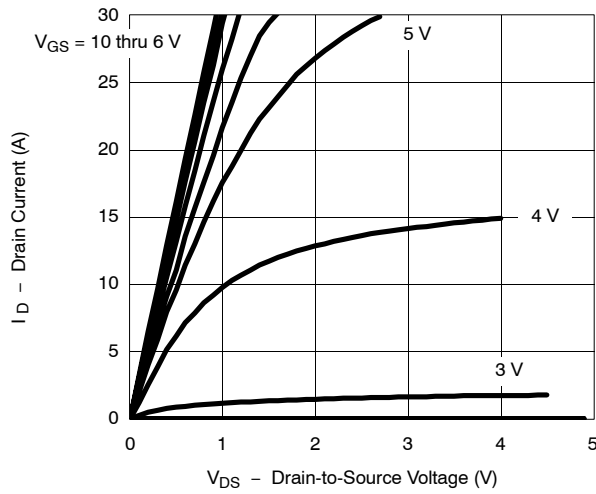
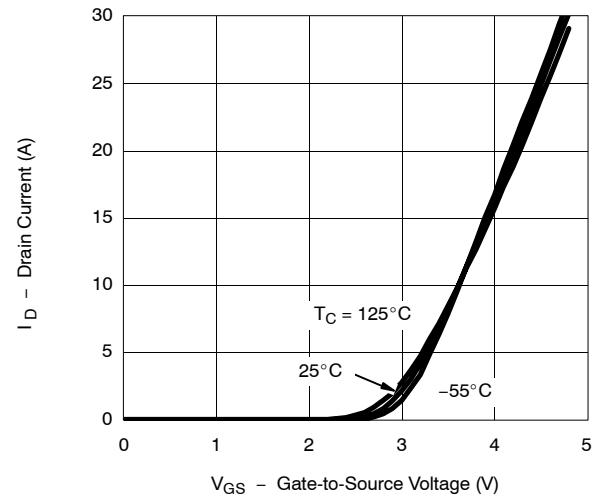
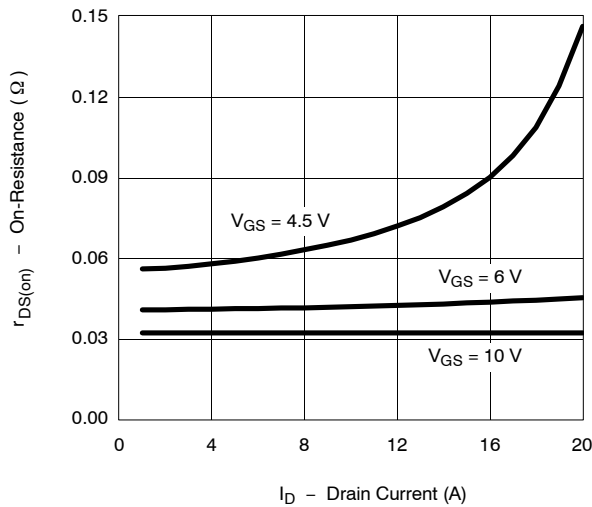
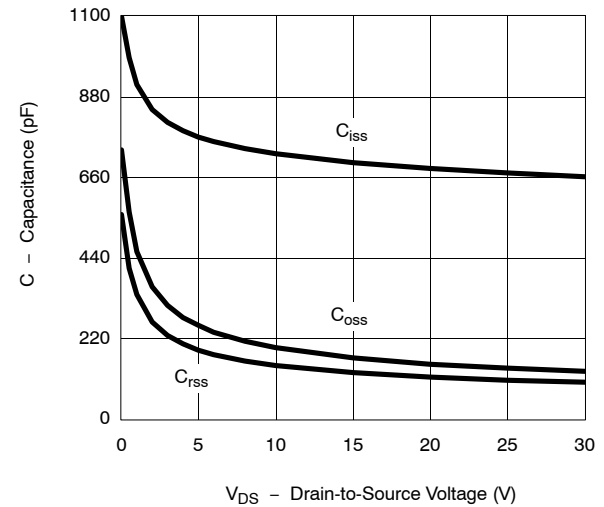
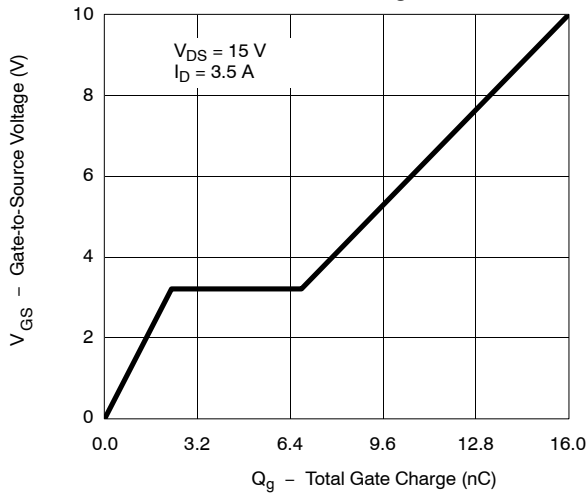
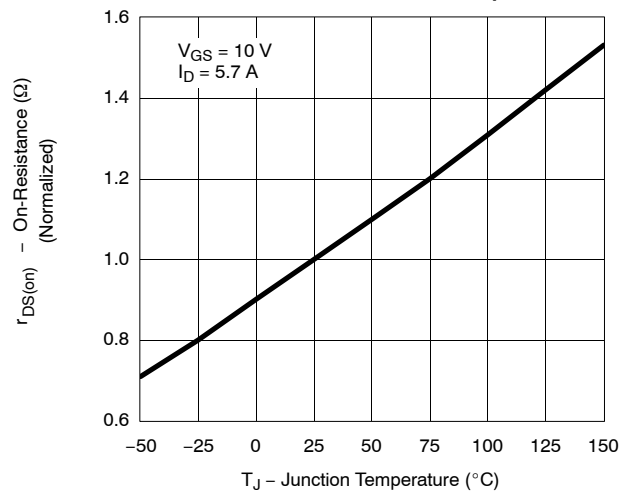
a. Surface Mounted on 1" x 1" FR4 Board.

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

Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = -250\ \mu\text{A}$	-1.0		-3.0	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\ \text{V}$, $V_{GS} = \pm 20\ \text{V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -30\ \text{V}$, $V_{GS} = 0\ \text{V}$			-1	μA
		$V_{DS} = -30\ \text{V}$, $V_{GS} = 0\ \text{V}$, $T_J = 70^\circ\text{C}$			-5	
On-State Drain Current ^b	$I_{D(on)}$	$V_{DS} \leq -10\ \text{V}$, $V_{GS} = -10\ \text{V}$	-20			A
		$V_{DS} \leq -5\ \text{V}$, $V_{GS} = -4.5\ \text{V}$	-5			
Drain-Source On-State Resistance ^b	$r_{DS(on)}$	$V_{GS} = -10\ \text{V}$, $I_D = -5.7\ \text{A}$		0.033	0.042	Ω
		$V_{GS} = -6\ \text{V}$, $I_D = -5\ \text{A}$		0.043	0.055	
		$V_{GS} = -4.5\ \text{V}$, $I_D = -4.4\ \text{A}$		0.056	0.070	
Forward Transconductance ^b	g_{fs}	$V_{DS} = -15\ \text{V}$, $I_D = -5.7\ \text{A}$		13		S
Diode Forward Voltage ^b	V_{SD}	$I_S = -2.3\ \text{A}$, $V_{GS} = 0\ \text{V}$		-0.8	-1.1	V
Dynamic^a						
Total Gate Charge	Q_g	$V_{DS} = -15\ \text{V}$, $V_{GS} = -10\ \text{V}$, $I_D = -3.5\ \text{A}$		16	24	nC
Gate-Source Charge	Q_{gs}			2.3		
Gate-Drain Charge	Q_{gd}			4.5		
Gate Resistance	R_g			8.8		Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -15\ \text{V}$, $R_L = 15\ \Omega$ $I_D \approx -1\ \text{A}$, $V_{GEN} = -10\ \text{V}$, $R_G = 6\ \Omega$		14	25	ns
Rise Time	t_r			14	25	
Turn-Off Delay Time	$t_{d(off)}$			42	70	
Fall Time	t_f			30	50	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = -1.2\ \text{A}$, $di/dt = 100\ \text{A}/\mu\text{s}$		30	60	

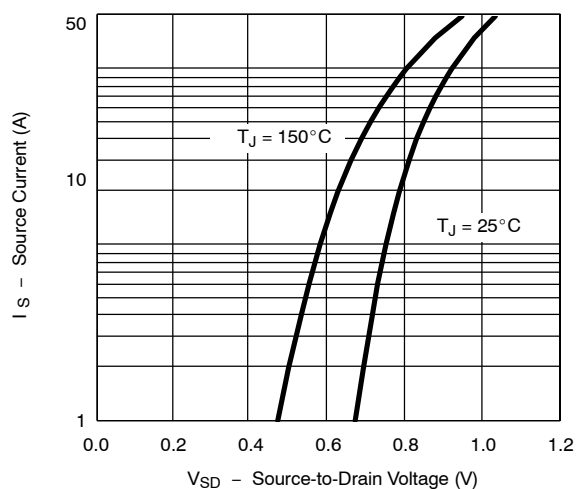
Notes

- a. Guaranteed by design, not subject to production testing.
b. Pulse test; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.

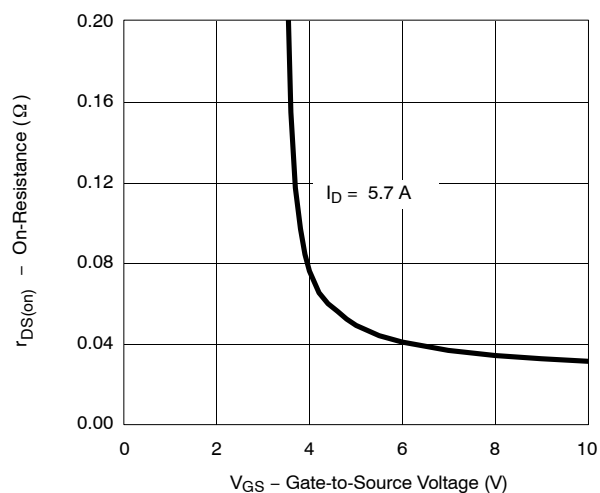
**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)****Output Characteristics****Transfer Characteristics****On-Resistance vs. Drain Current****Capacitance****Gate Charge****On-Resistance vs. Junction Temperature**

TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

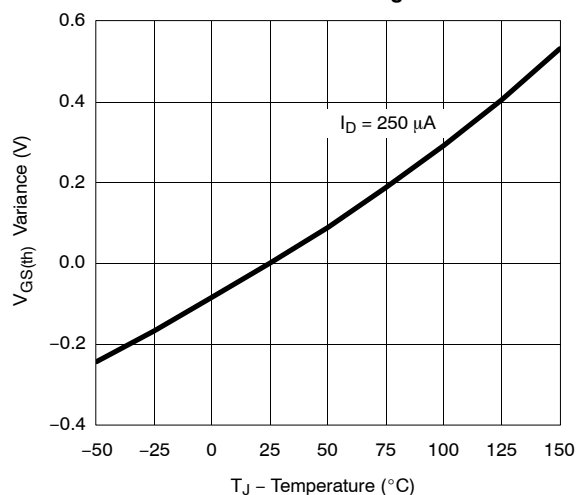
Source-Drain Diode Forward Voltage



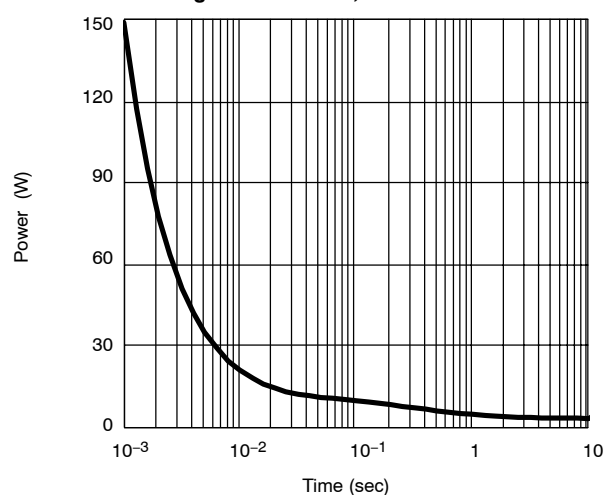
On-Resistance vs. Gate-to-Source Voltage



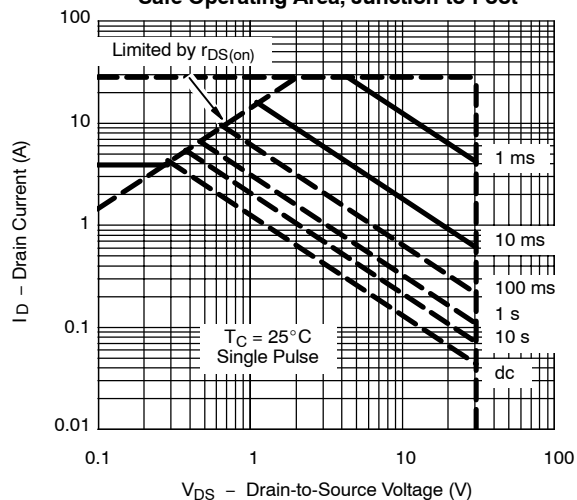
Threshold Voltage



Single Pulse Power, Junction-to-Ambient



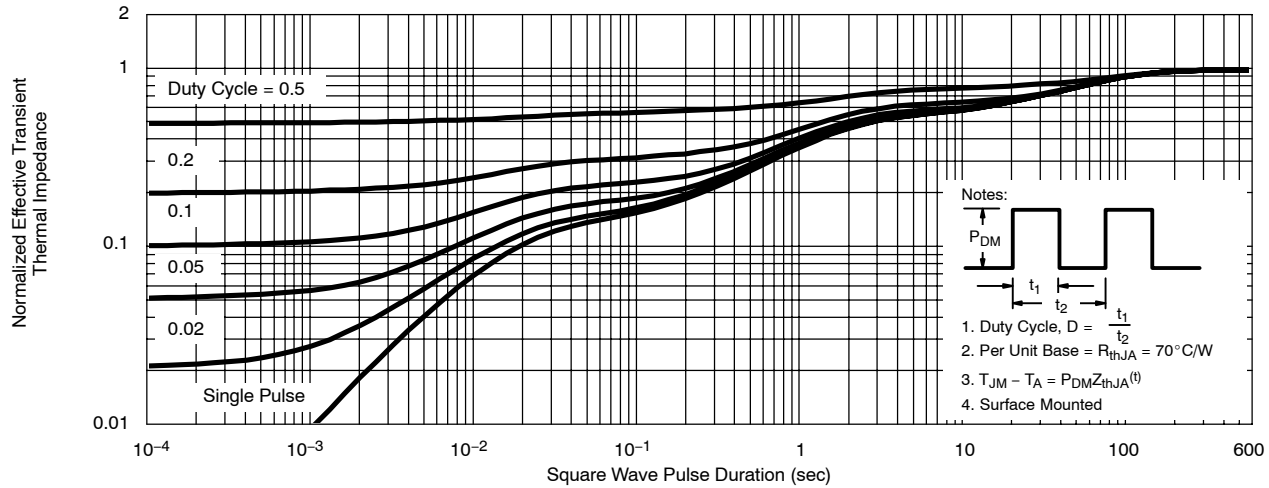
Safe Operating Area, Junction-to-Foot





TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

