

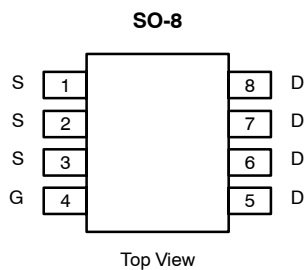


P-Channel 30-V (D-S) MOSFET

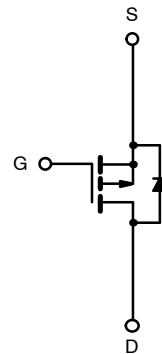
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-30	0.042 @ $V_{GS} = -10$ V	-5.7
	0.055 @ $V_{GS} = -6$ V	-5.0
	0.070 @ $V_{GS} = -4.5$ V	-4.4

FEATURES

- TrenchFET® Power MOSFET



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



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}	-30		V	
Gate-Source Voltage	V_{GS}	± 20			
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	I_D	$T_A = 25^\circ\text{C}$	-5.7	-4.1	A
		$T_A = 70^\circ\text{C}$	-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	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	$t \leq 10$ sec	R_{thJA}	40	50	$^\circ\text{C}/\text{W}$
	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 °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	-1.0		-3.0	V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -30 V, V _{GS} = 0 V			-1	μA
		V _{DS} = -30 V, V _{GS} = 0 V, T _J = 70 °C			-5	
On-State Drain Current ^b	I _{D(on)}	V _{DS} ≤ -10 V, V _{GS} = -10 V	-20			A
		V _{DS} ≤ -5 V, V _{GS} = -4.5 V	-5			
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = -10 V, I _D = -5.7 A		0.033	0.042	Ω
		V _{GS} = -6 V, I _D = -5 A		0.043	0.055	
		V _{GS} = -4.5 V, I _D = -4.4 A		0.056	0.070	
Forward Transconductance ^b	g _{fs}	V _{DS} = -15 V, I _D = -5.7 A		13		S
Diode Forward Voltage ^b	V _{SD}	I _S = -2.3 A, V _{GS} = 0 V		-0.8	-1.1	V
Dynamic^a						
Total Gate Charge	Q _g	V _{DS} = -15 V, V _{GS} = -10 V, I _D = -3.5 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 V, R _L = 15 Ω I _D ≅ -1 A, V _{GEN} = -10 V, R _G = 6 Ω		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 A, di/dt = 100 A/μs		30	

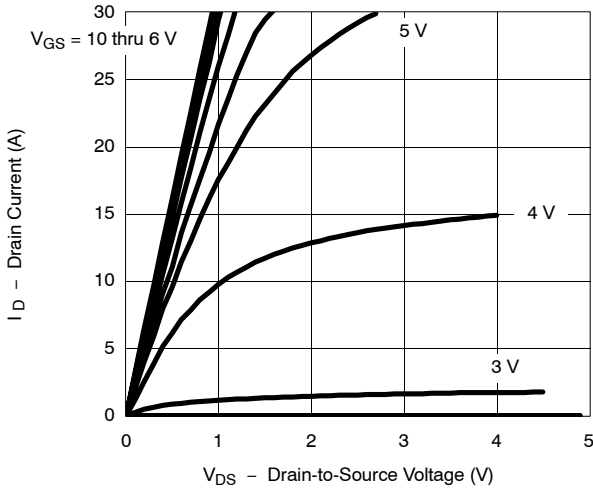
Notes

- a. Guaranteed by design, not subject to production testing.
b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.

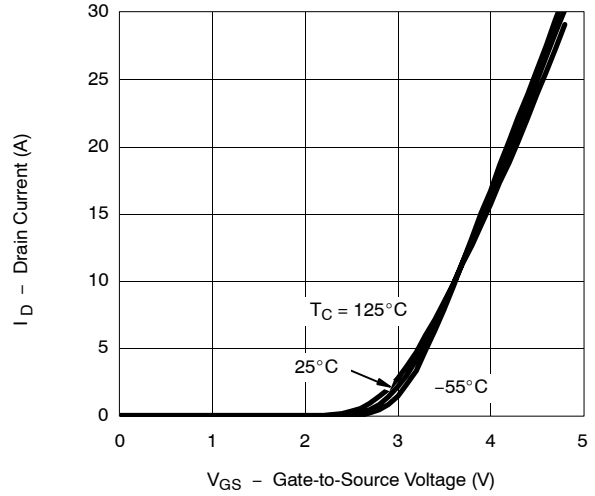


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

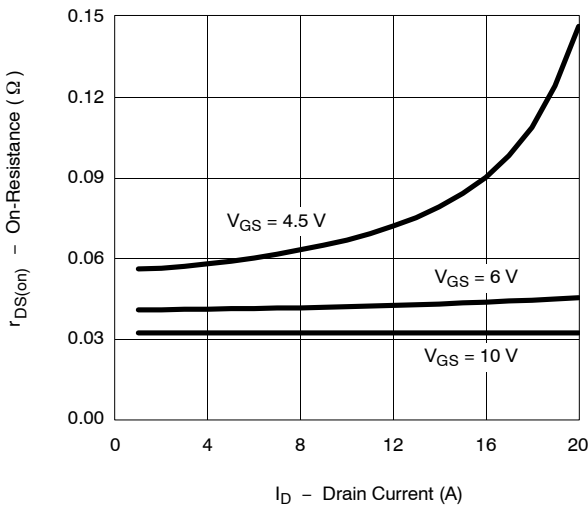
Output Characteristics



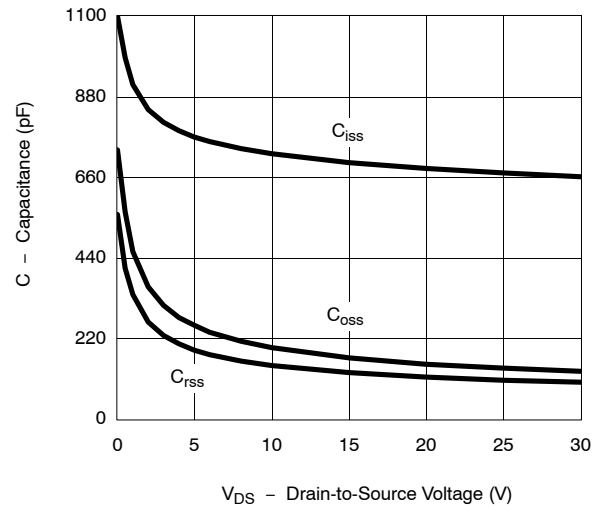
Transfer Characteristics



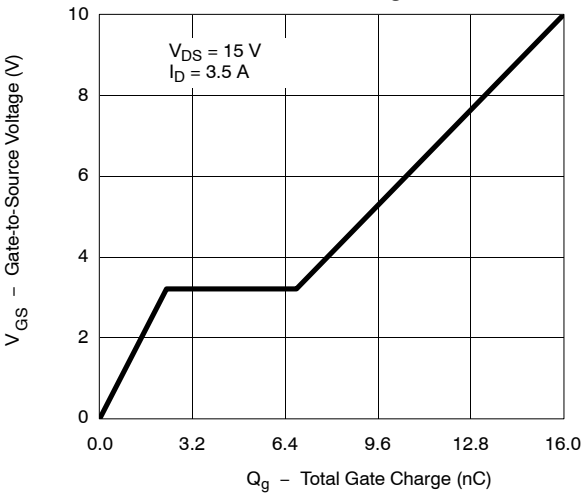
On-Resistance vs. Drain Current



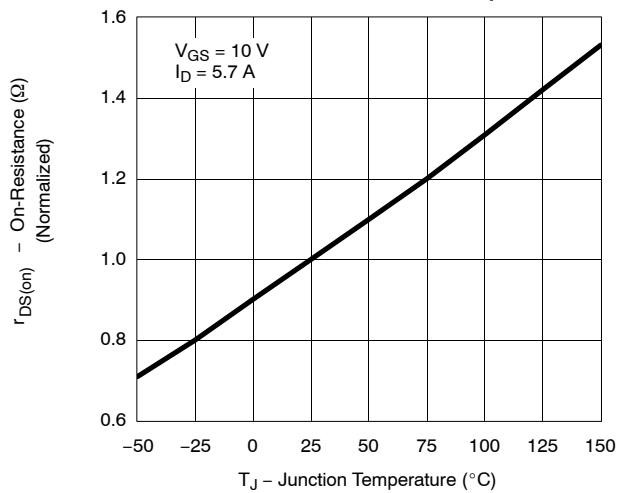
Capacitance



Gate Charge

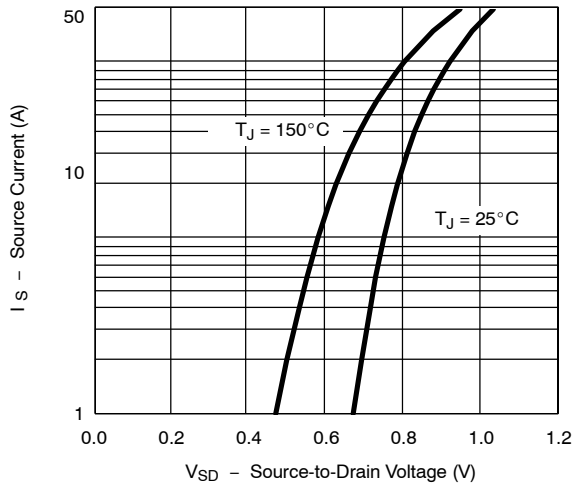


On-Resistance vs. Junction Temperature

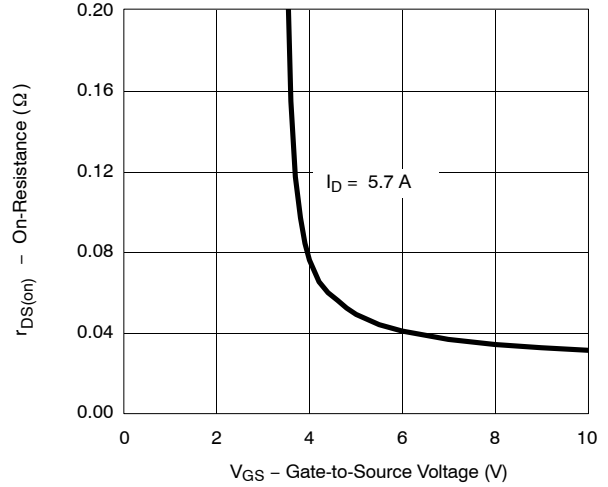


TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

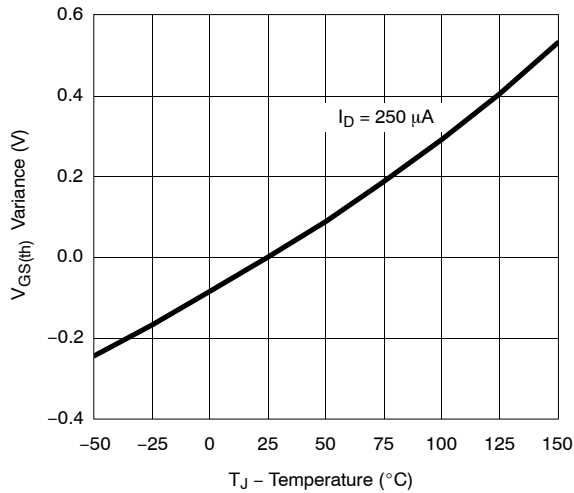
Source-Drain Diode Forward Voltage



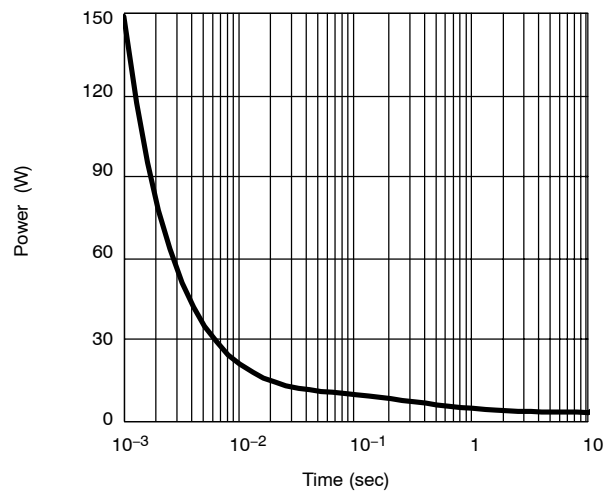
On-Resistance vs. Gate-to-Source Voltage



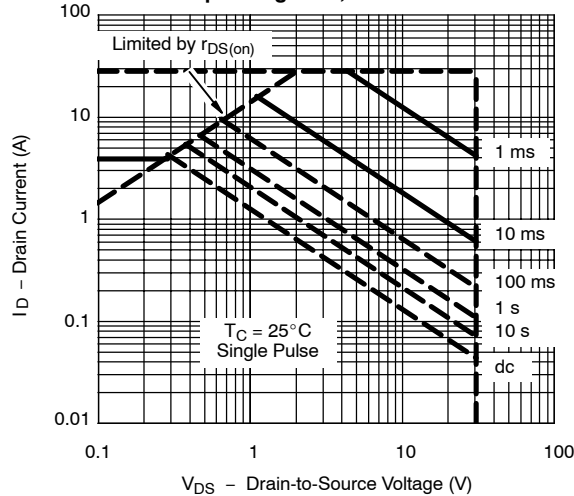
Threshold Voltage



Single Pulse Power, Junction-to-Ambient



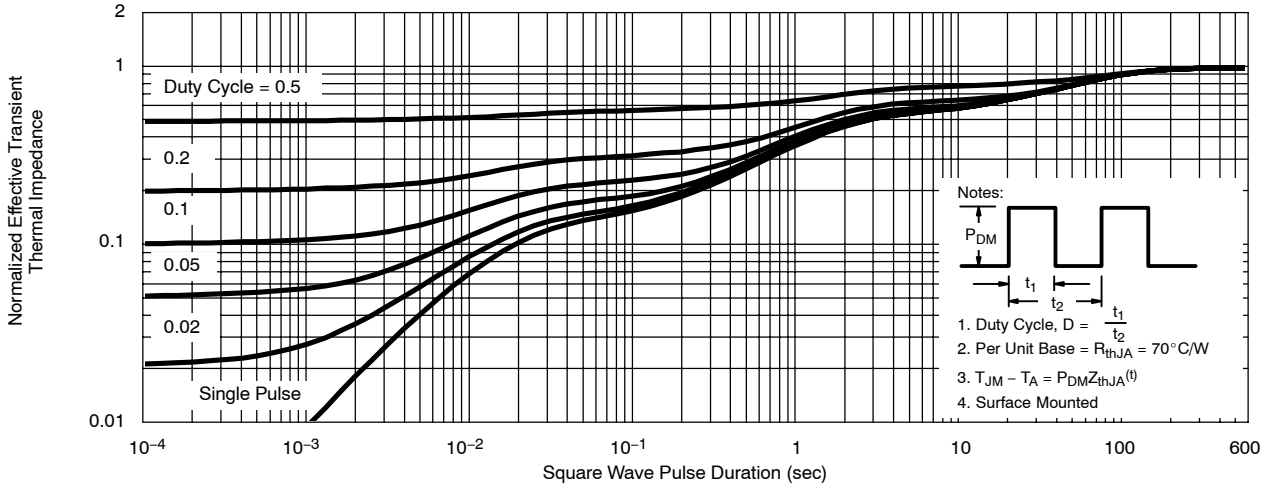
Safe Operating Area, Junction-to-Foot





TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

