

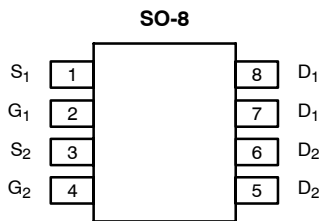


Dual N-Channel 30-V (D-S) MOSFET with Schottky Diode

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
30	0.022 @ $V_{GS} = 10$ V	7.5
	0.030 @ $V_{GS} = 4.5$ V	6.5

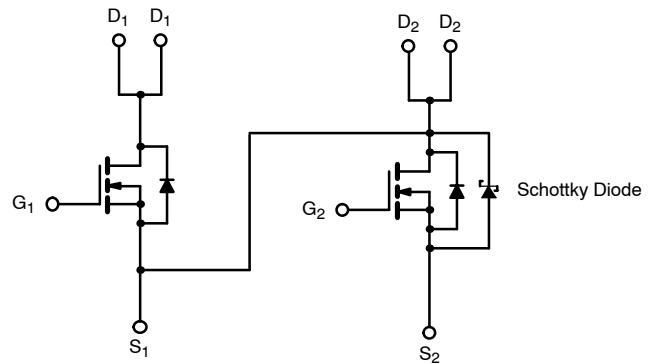
SCHOTTKY PRODUCT SUMMARY		
V_{DS} (V)	V_{SD} (V) Diode Forward Voltage	I_F (A)
30	0.50 V @ 1.0 A	2.0

LITTLE FOOT PLUS™



Top View

Ordering Information: Si4830DY
Si4830DY-T1 (with Tape and Reel)



N-Channel MOSFET

N-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	$T_A = 25^\circ\text{C}$	7.5	5.7	A
		$T_A = 70^\circ\text{C}$	6.0	4.6	
Pulsed Drain Current	I_{DM}	30		A	
Continuous Source Current (Diode Conduction) ^a	I_S	1.7	0.9		
Maximum Power Dissipation ^a	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	MOSFET		Schottky		Unit
			Typ	Max	Typ	Max	
Maximum Junction-to-Ambient ^a	$t \leq 10$ sec	R_{thJA}	52	62.5	53	62.5	$^\circ\text{C/W}$
	Steady-State		93	110	93	110	
Maximum Junction-to-Foot (Drain)	Steady-State	R_{thJC}	35	40	35	40	

Notes

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

MOSFET SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED).							
Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit	
Static							
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	0.8			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}	$V_{DS} = 30\ \text{V}, V_{GS} = 0\ \text{V}$	Ch-1		1	μA	
			Ch-2		100		
		$V_{DS} = 30\ \text{V}, V_{GS} = 0\ \text{V}, T_J = 85^\circ\text{C}$	Ch-1		15		
			Ch-2		2000		
On-State Drain Current ^b	$I_{D(on)}$	$V_{DS} = 5\ \text{V}, V_{GS} = 10\ \text{V}$	20			A	
Drain-Source On-State Resistance ^b	$r_{DS(on)}$	$V_{GS} = 10\ \text{V}, I_D = 7.5\ \text{A}$		0.018	0.022	Ω	
		$V_{GS} = 4.5\ \text{V}, I_D = 6.5\ \text{A}$		0.024	0.030		
Forward Transconductance ^b	g_{fs}	$V_{DS} = 15\ \text{V}, I_D = 7.5\ \text{A}$		22		S	
Diode Forward Voltage ^b	V_{SD}	$I_S = 1\ \text{A}, V_{GS} = 0\ \text{V}$	Ch-1		0.8	1.2	V
			Ch-2		0.47	0.5	
Dynamic^a							
Total Gate Charge	Q_g	$V_{DS} = 15\ \text{V}, V_{GS} = 10\ \text{V}, I_D = 7.5\ \text{A}$		13	20	nC	
Gate-Source Charge	Q_{gs}			2			
Gate-Drain Charge	Q_{gd}			2.7			
Gate Resistance	R_g		0.5		3.2	Ω	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15\ \text{V}, R_L = 15\ \Omega$ $I_D \cong 1\ \text{A}, V_{GEN} = 10\ \text{V}, R_G = 6\ \Omega$		8	16	ns	
Rise Time	t_r			10	20		
Turn-Off Delay Time	$t_{d(off)}$			21	40		
Fall Time	t_f			10	20		
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = 1.7\ \text{A}, di/dt = 100\ \text{A}/\mu\text{s}$	Ch-1		40	80	
			Ch-2		32	70	

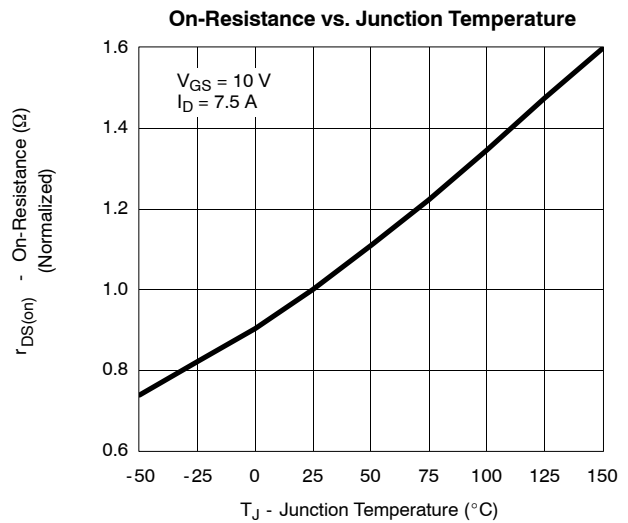
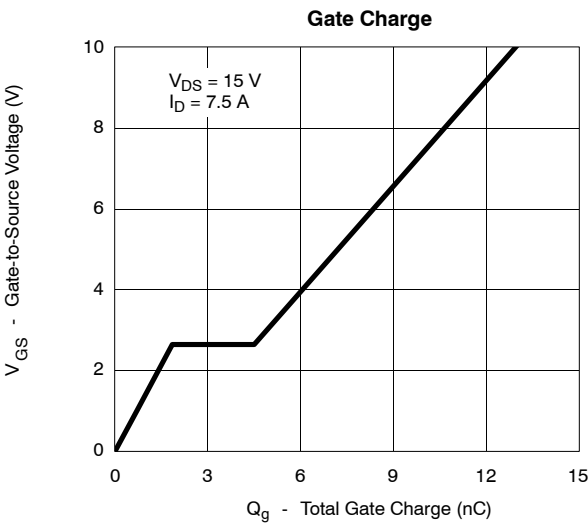
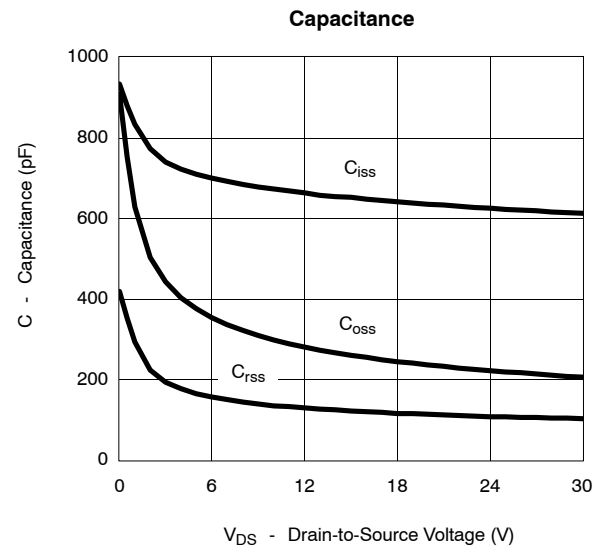
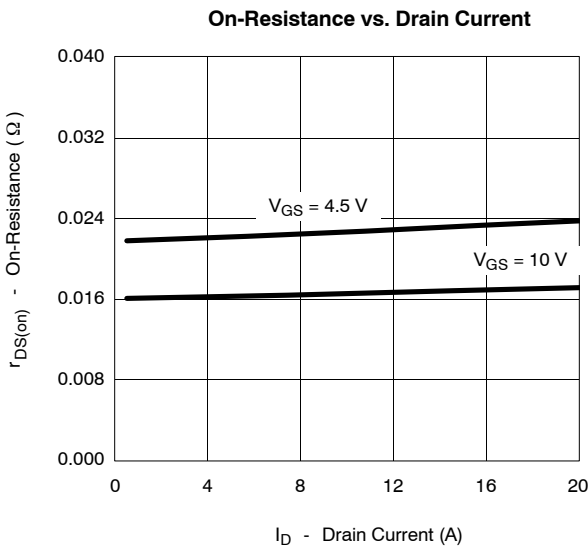
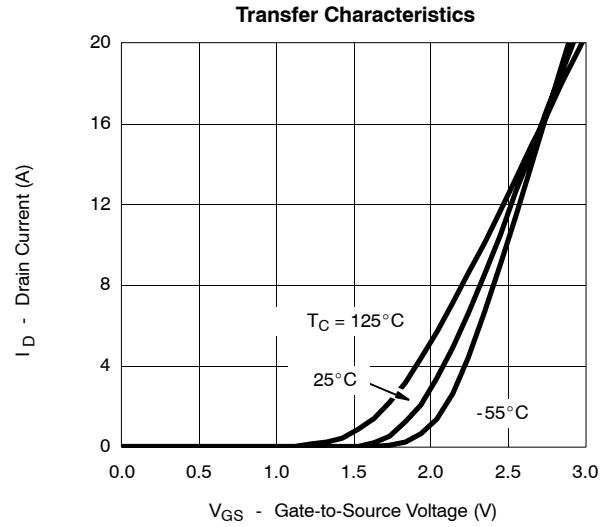
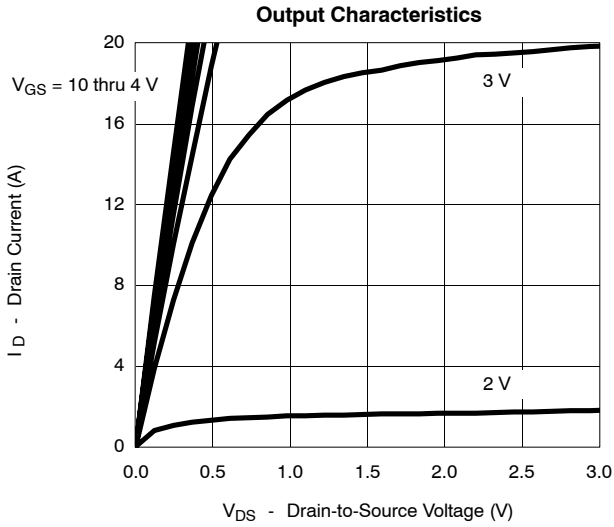
Notes

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

SCHOTTKY SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Forward Voltage Drop	V_F	$I_F = 1.0\ \text{A}$		0.47	0.50	V
		$I_F = 1.0\ \text{A}, T_J = 125^\circ\text{C}$		0.36	0.42	
Maximum Reverse Leakage Current	I_{rm}	$V_r = 30\ \text{V}$		0.004	0.100	mA
		$V_r = 30\ \text{V}, T_J = 100^\circ\text{C}$		0.7	10	
		$V_r = -30\ \text{V}, T_J = 125^\circ\text{C}$		3.0	20	
Junction Capacitance	C_T	$V_r = 10\ \text{V}$		50		pF



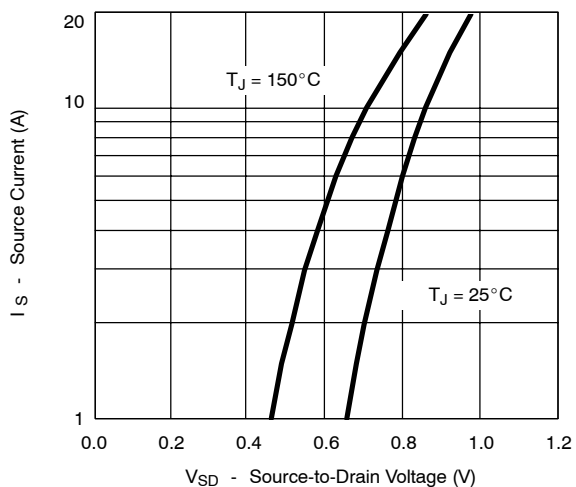
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) MOSFET



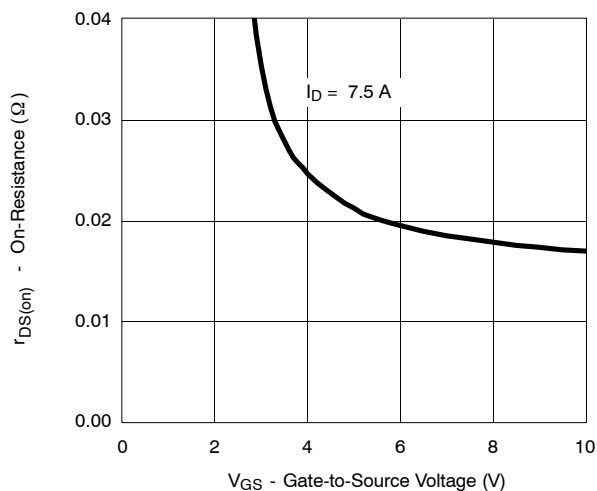
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

MOSFET

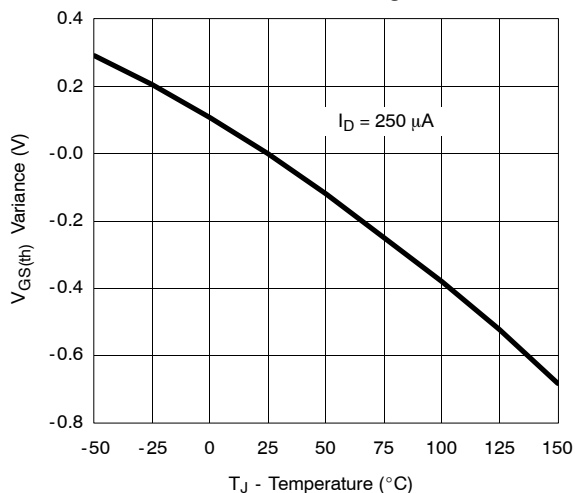
Source-Drain Diode Forward Voltage



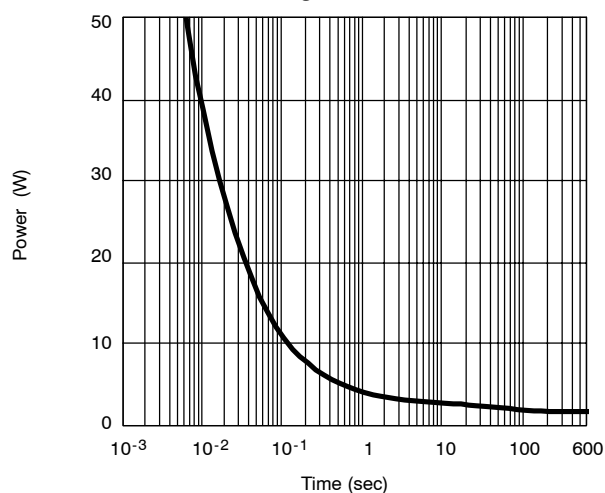
On-Resistance vs. Gate-to-Source Voltage



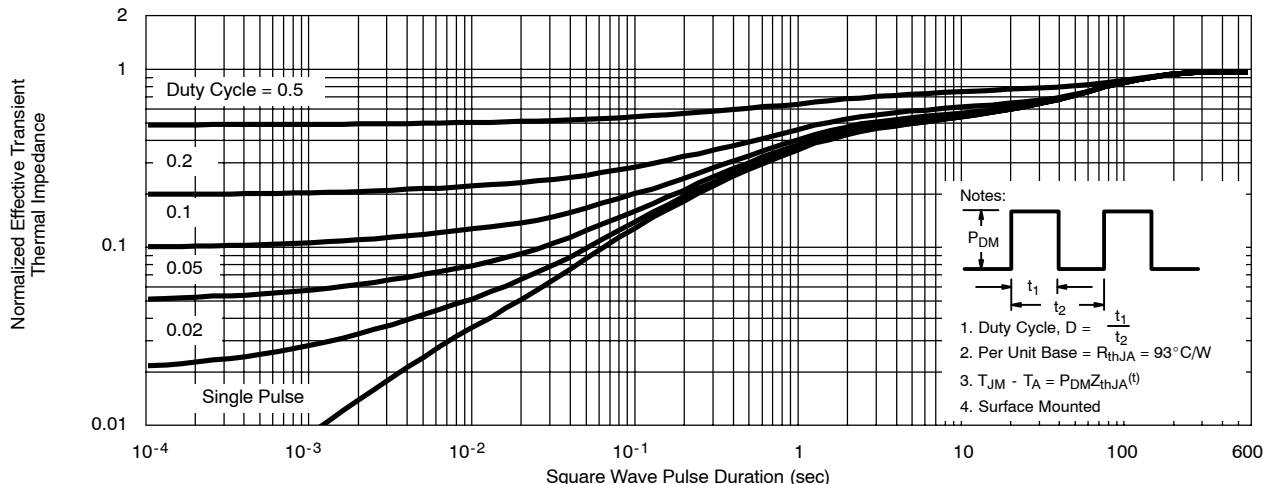
Threshold Voltage



Single Pulse Power

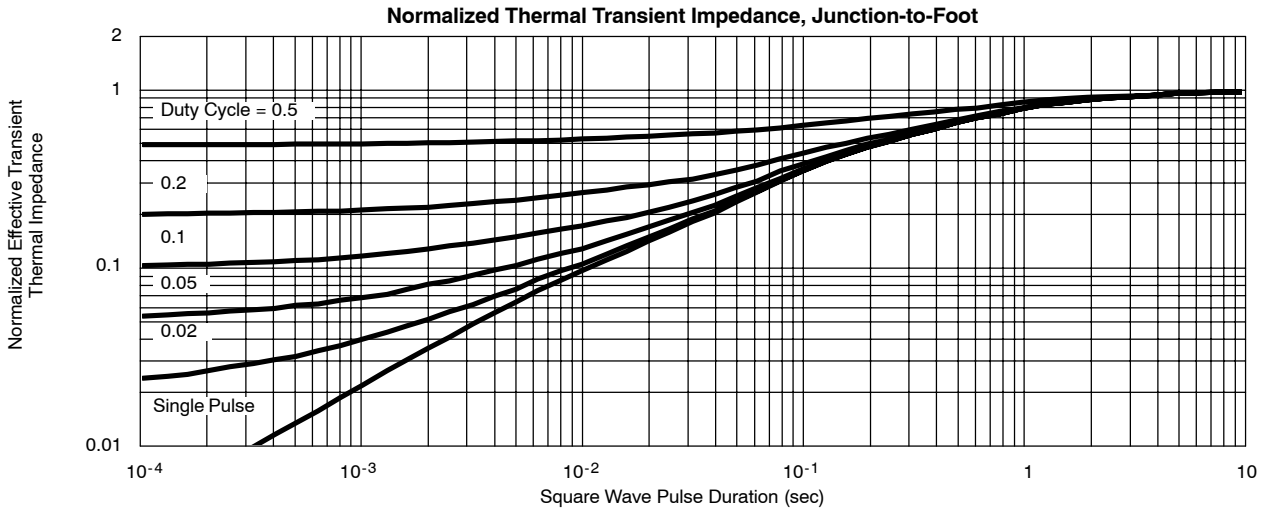


Normalized Thermal Transient Impedance, Junction-to-Ambient





TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED) MOSFET



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED) SCHOTTKY

