



P-Channel 12-V (D-S) MOSFET

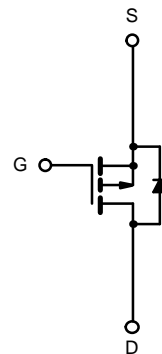
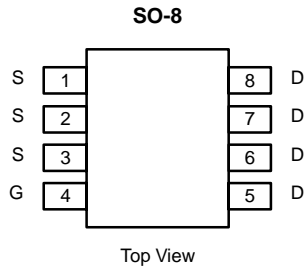
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-12	0.0065 @ $V_{GS} = -4.5$ V	-14
	0.00775 @ $V_{GS} = -2.5$ V	-13
	0.01025 @ $V_{GS} = -1.8$ V	-12

FEATURES

- TrenchFET® Power MOSFET

APPLICATIONS

- Load Switch
- Battery Switch



Ordering Information: Si4453DY
Si4453DY-T1 (with Tape and Reel)

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}	± 8			
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	I_D	$T_A = 25^\circ\text{C}$	-14	-10	A
		$T_A = 70^\circ\text{C}$	-11.5	-8	
Pulsed Drain Current	I_{DM}	-50			
continuous Source Current (Diode Conduction) ^a	I_S	-2.7	-1.36		
Maximum Power Dissipation ^a	P_D	$T_A = 25^\circ\text{C}$	3.0	1.5	W
		$T_A = 70^\circ\text{C}$	1.9	0.95	
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	33	42	$^\circ\text{C/W}$
		Steady State	70	84	
Maximum Junction-to-Foot (Drain)	R_{thJF}	16	21		

Notes

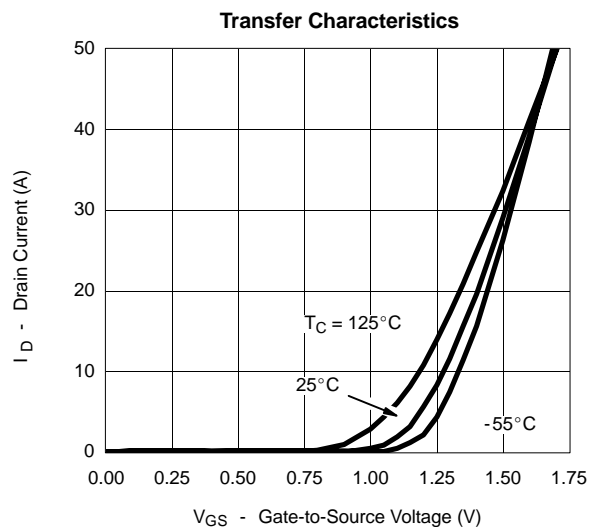
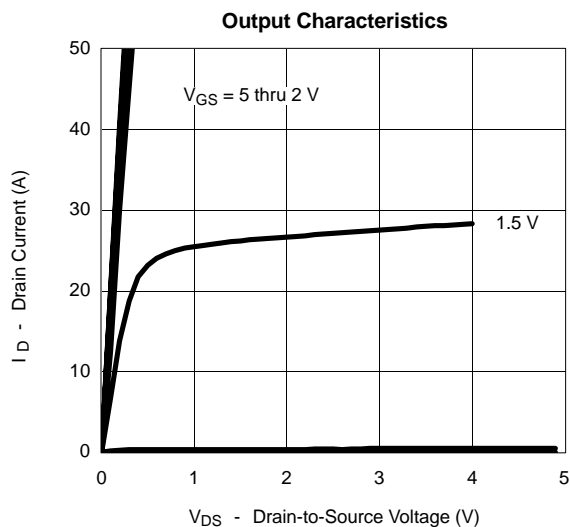
a. Surface Mounted on 1" x 1" FR4 Board.

SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -600 μA	-0.4		-0.9	V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±8 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -9.6 V, V _{GS} = 0 V			-1	μA
		V _{DS} = -9.6 V, V _{GS} = 0 V, T _J = 70 °C			-10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} = -5 V, V _{GS} = -4.5 V	-30			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = -4.5 V, I _D = -14 A		0.0051	0.0065	Ω
		V _{GS} = -2.5 V, I _D = -13 A		0.0062	0.00775	
		V _{GS} = -1.8 V, I _D = -12 A		0.0082	0.01025	
Forward Transconductance ^a	g _{fs}	V _{DS} = -6 V, I _D = -14 A		80		S
Diode Forward Voltage ^a	V _{SD}	I _S = -2.7 A, V _{GS} = 0 V		-0.6	-1.1	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = -6 V, V _{GS} = -5 V, I _D = -14 A		110	165	nC
Gate-Source Charge	Q _{gs}			15		
Gate-Drain Charge	Q _{gd}			27.5		
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		110	170	ns
Rise Time	t _r			235	350	
Turn-Off Delay Time	t _{d(off)}			410	620	
Fall Time	t _f			285	430	
Gate Resistance	R _g				3.6	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = -2.1 A, di/dt = 100 A/μs		180	270	ns

Notes

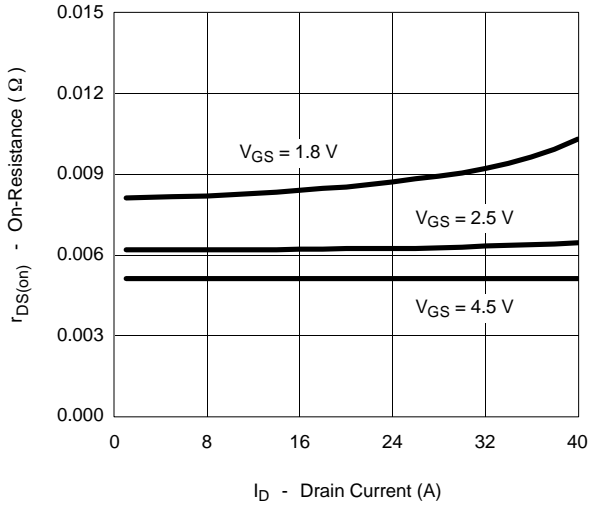
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

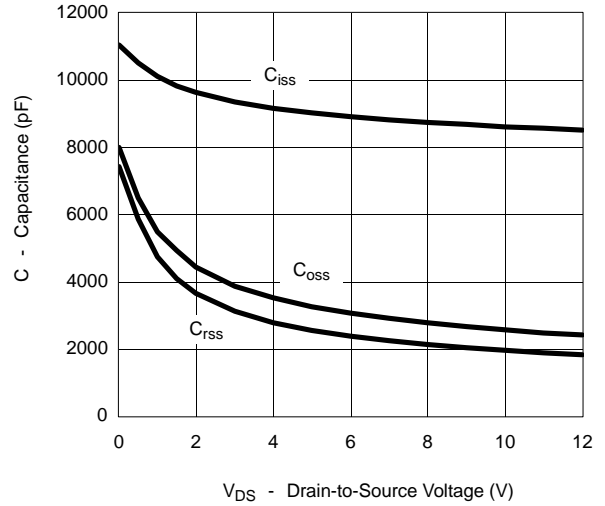


TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

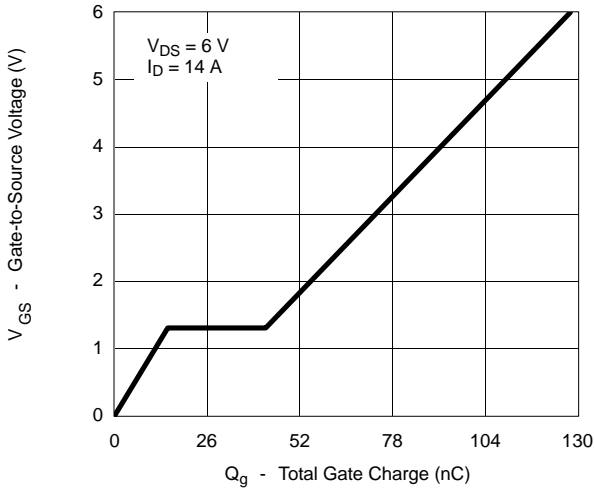
On-Resistance vs. Drain Current



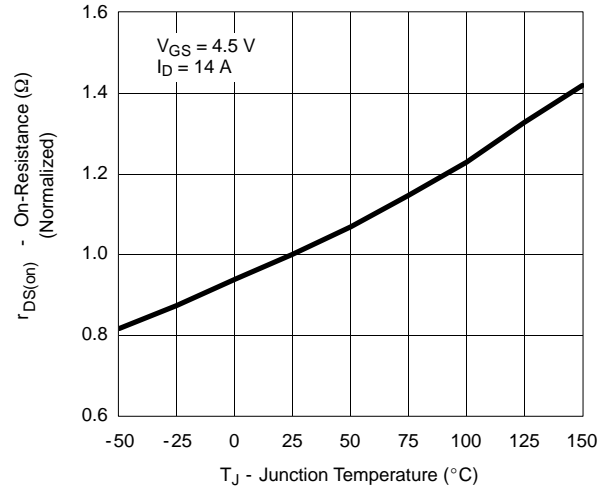
Capacitance



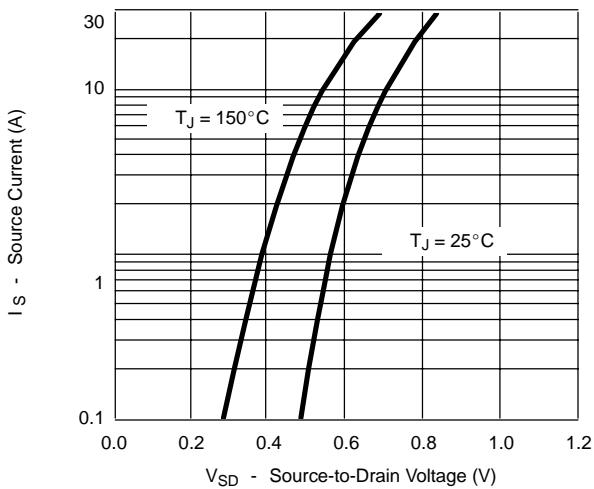
Gate Charge



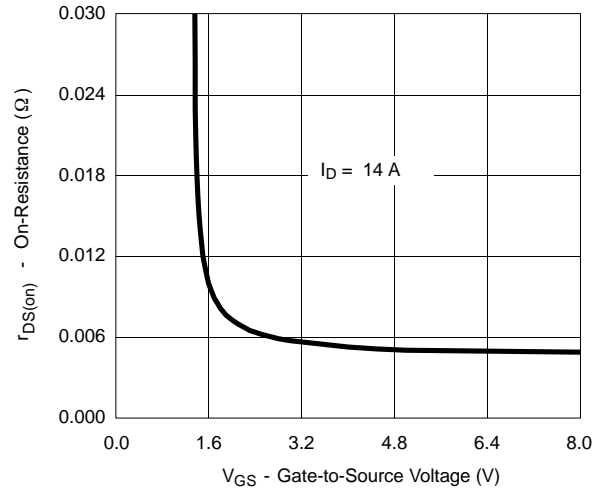
On-Resistance vs. Junction Temperature



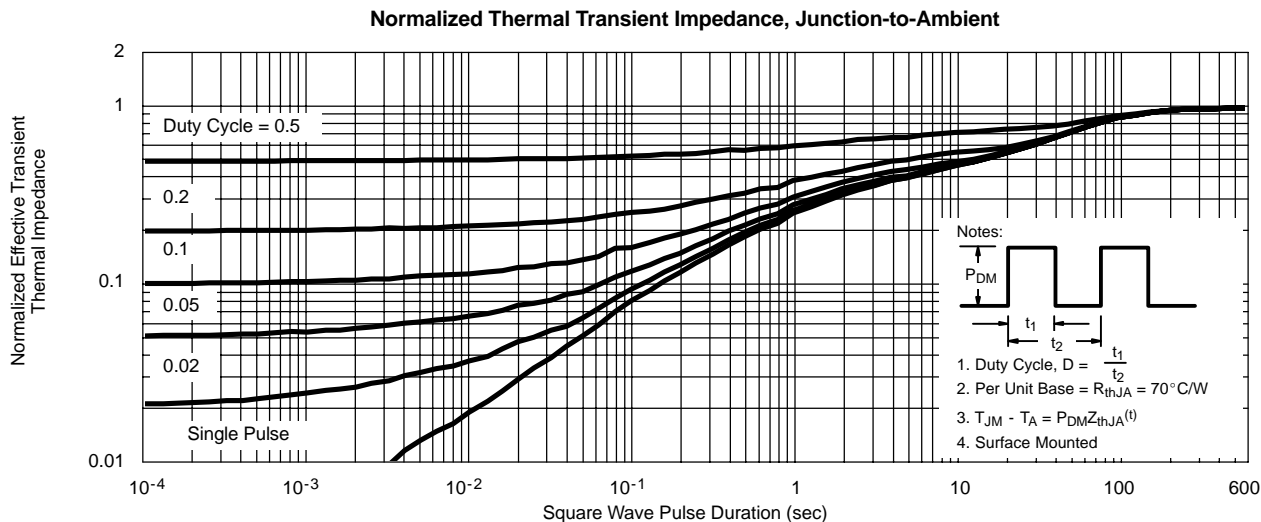
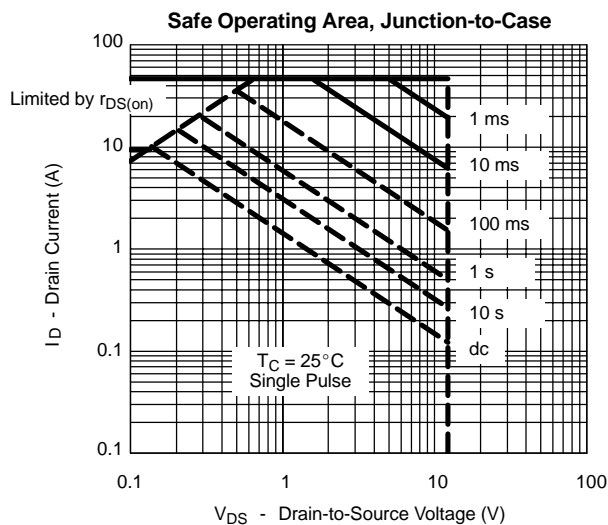
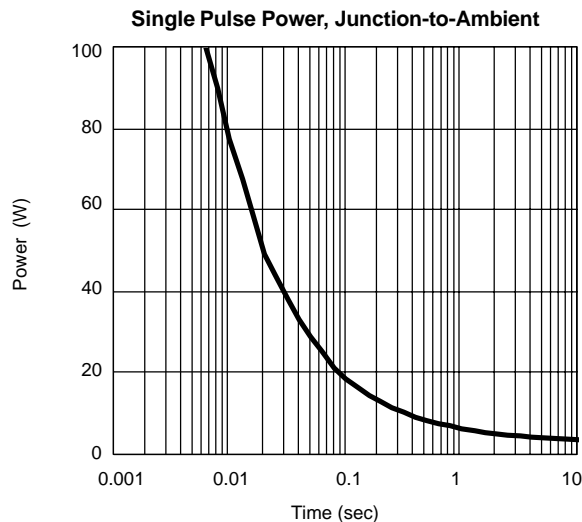
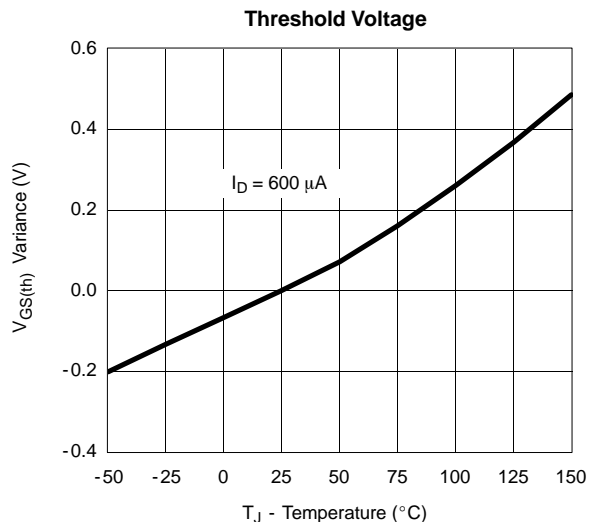
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

