



N-Channel 60-V (D-S) MOSFET

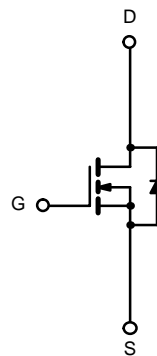
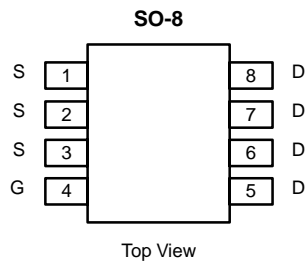
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
60	0.011 @ $V_{GS} = 10$ V	12.7
	0.013 @ $V_{GS} = 6.0$ V	11.7

FEATURES

- TrenchFET® Power MOSFETS
- Extended Temperature Range

APPLICATION

- Primary Side Switch



Ordering Information: Si4470EY
Si4470EY-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}	60		V
Gate-Source Voltage		V_{GS}	± 20		
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	$T_A = 25^\circ\text{C}$	I_D	12.7	9.0	A
	$T_A = 70^\circ\text{C}$		10.6	7.5	
Pulsed Drain Current		I_{DM}	50		
Avalanch Current		I_{AS}	50		
Continuous Source Current (Diode Conduction) ^a		I_S	3.1	1.5	W
Maximum Power Dissipation ^a	$T_A = 25^\circ\text{C}$	P_D	3.75	1.85	
	$T_A = 70^\circ\text{C}$		2.6	1.3	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175		$^\circ\text{C}$

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	$t \leq 10$ sec	R_{thJA}	33	40	$^\circ\text{C/W}$
	Steady State		65	80	
Maximum Junction-to-Foot (Drain)		R_{thJF}	17	21	

Notes

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

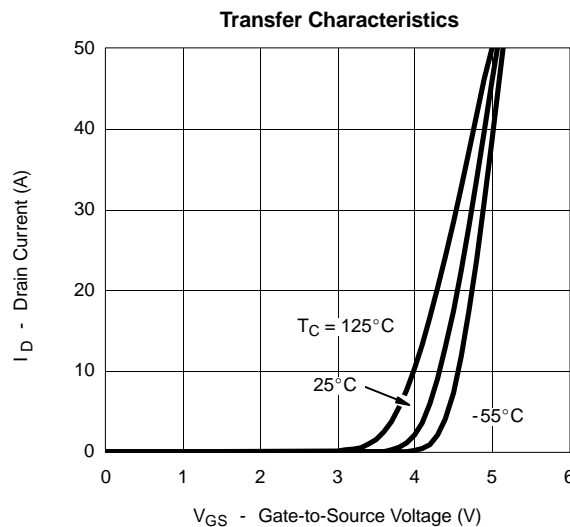
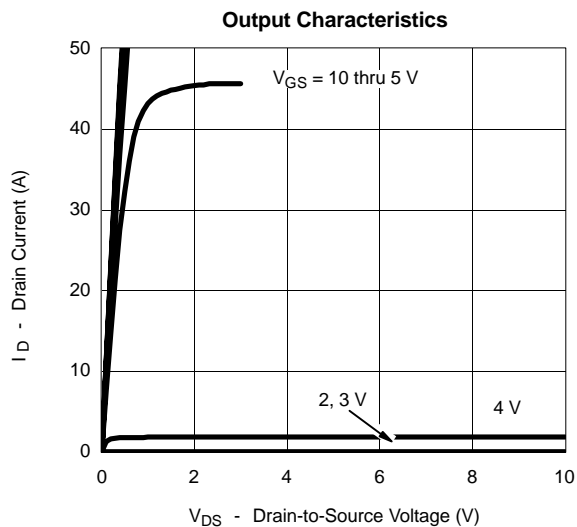
SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	2.0			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} = 48 V, V _{GS} = 0 V			1	μA
		V _{DS} = 48 V, V _{GS} = 0 V, T _J = 55 °C			5	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	50			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 12 A		0.009	0.011	Ω
		V _{GS} = 6.0 V, I _D = 10 A		0.0105	0.013	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 10 A		50		S
Diode Forward Voltage ^a	V _{SD}	I _S = 3.0 A, V _{GS} = 0 V		0.75	1.2	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = 30 V, V _{GS} = 10 V, I _D = 12 A		46	57	nC
Gate-Source Charge	Q _{gs}			11.5		
Gate-Drain Charge	Q _{gd}			11.5		
Gate Resistance	R _g		0.25	0.85	1.4	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = 30 V, R _L = 30 Ω I _D ≅ 1.0 A, V _{GEN} = 10 V, R _G = 6 Ω		16	25	ns
Rise Time	t _r			12	18	
Turn-Off Delay Time	t _{d(off)}			50	75	
Fall Time	t _f			30	45	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 3.0 A, di/dt = 100 A/μs		40	60	

Notes

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

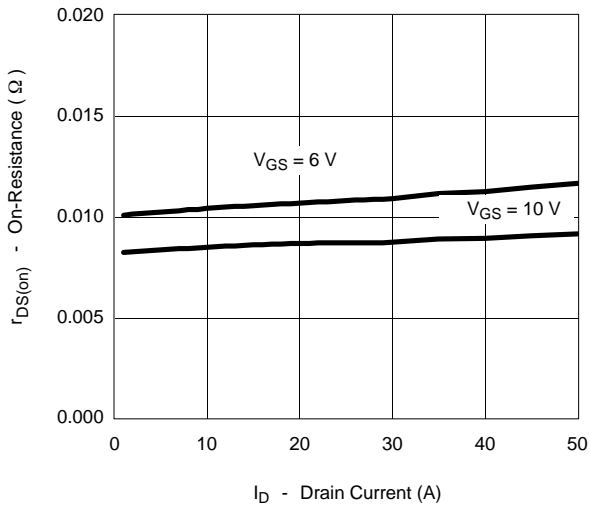
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



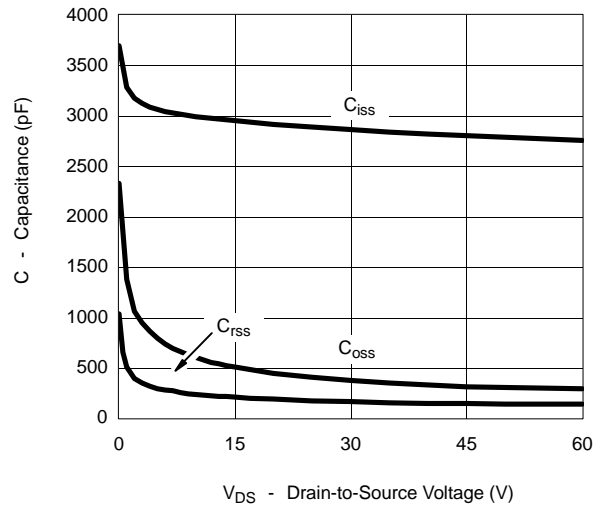


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

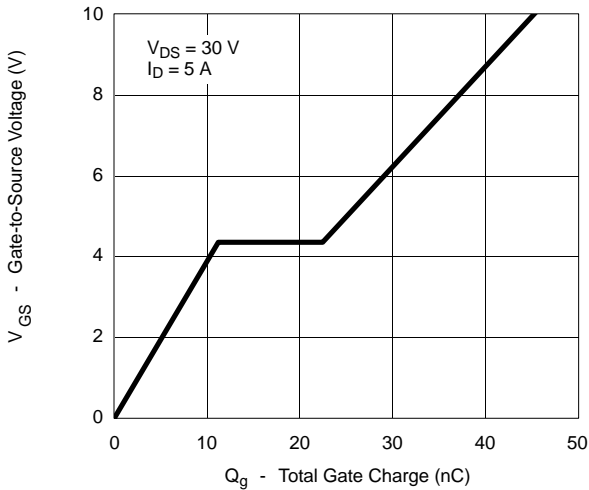
On-Resistance vs. Drain Current



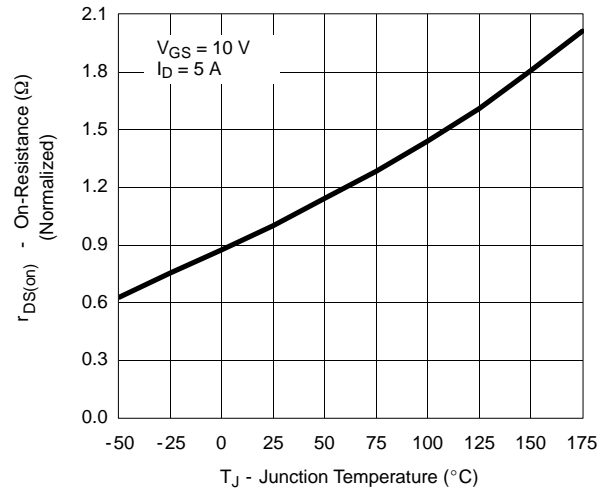
Capacitance



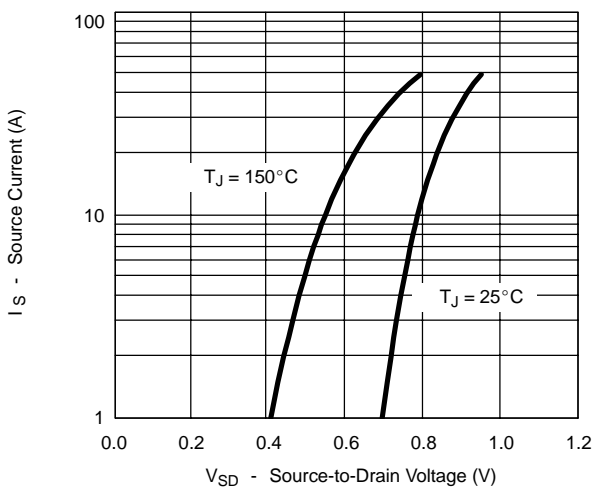
Gate Charge



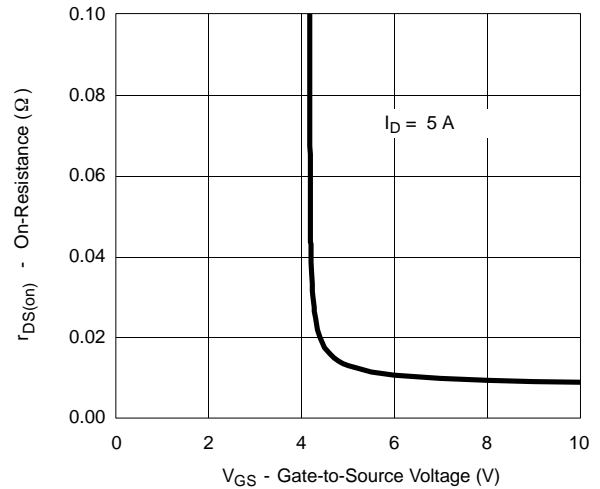
On-Resistance vs. Junction Temperature



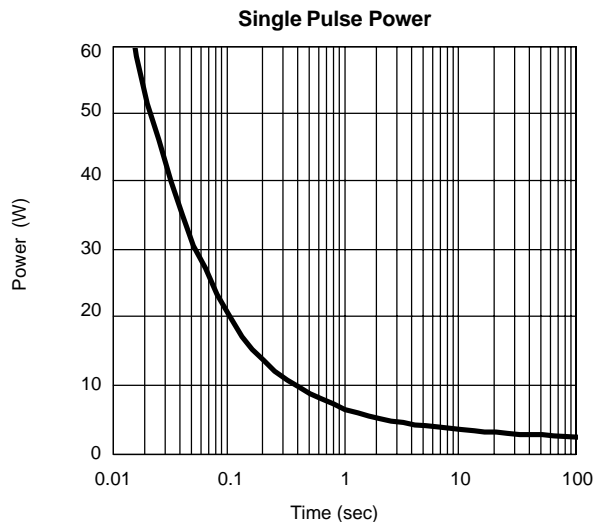
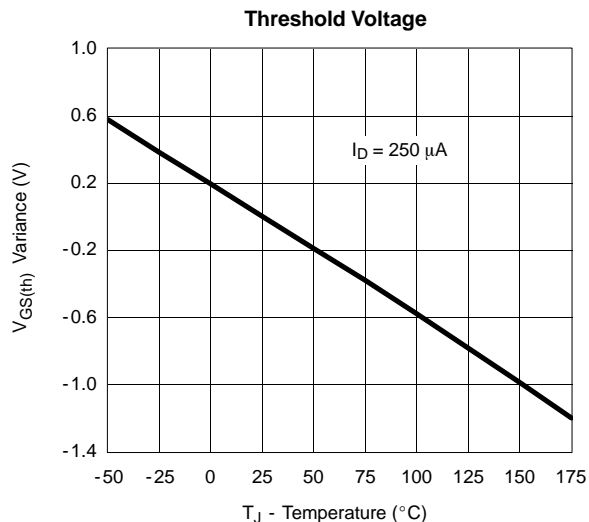
Source-Drain Diode Forward Voltage



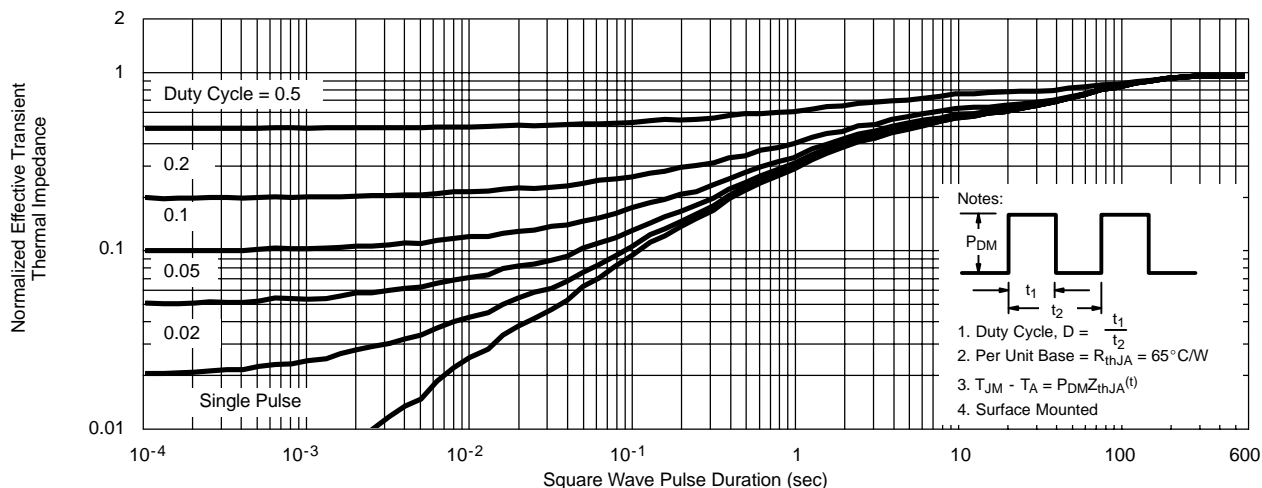
On-Resistance vs. Gate-to-Source Voltage



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

