



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

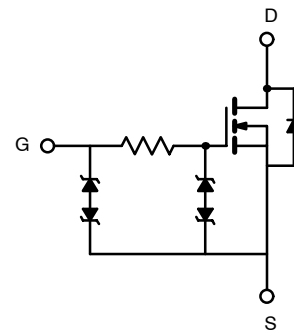
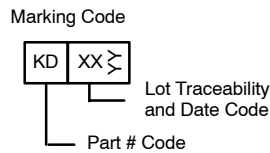
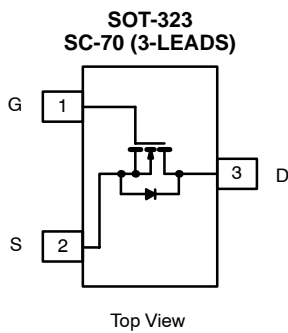
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
60	2.5 @ $V_{GS} = 10$ V	0.25
	3 @ $V_{GS} = 4.5$ V	0.23
	8 @ $V_{GS} = 3$ V	0.05

FEATURES

- TrenchFET® Power MOSFET
- ESD Protected: 2000 V

APPLICATIONS

- P-Channel Driver
 - Notebook PC
 - Servers



Ordering Information: Si1330EDL-T1

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)					
Parameter		Symbol	5 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	0.25	0.24	A
	$T_A = 70^\circ\text{C}$		0.2	0.19	
Pulsed Drain Current		I_{DM}	1.0		
Continuous Diode Current (Diode Conduction) ^a		I_S	0.26	0.23	
Maximum Power Dissipation ^a	$T_A = 25^\circ\text{C}$	P_D	0.31	0.28	W
	$T_A = 70^\circ\text{C}$		0.20	0.18	
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	$t \leq 5$ sec	R_{thJA}	355	400	$^\circ\text{C/W}$
	Steady State		380	450	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	285	340	

Notes

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

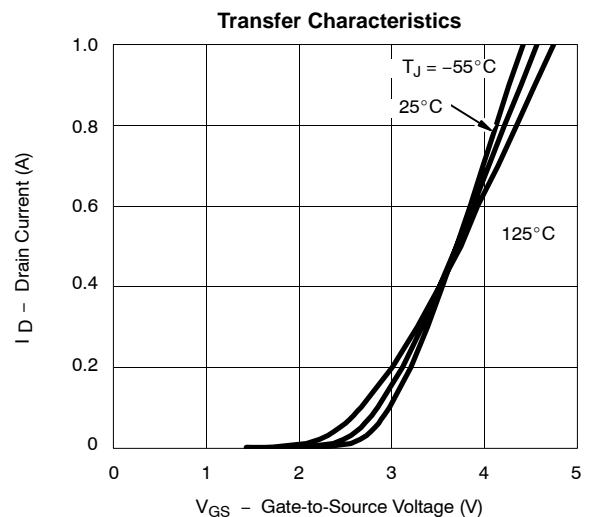
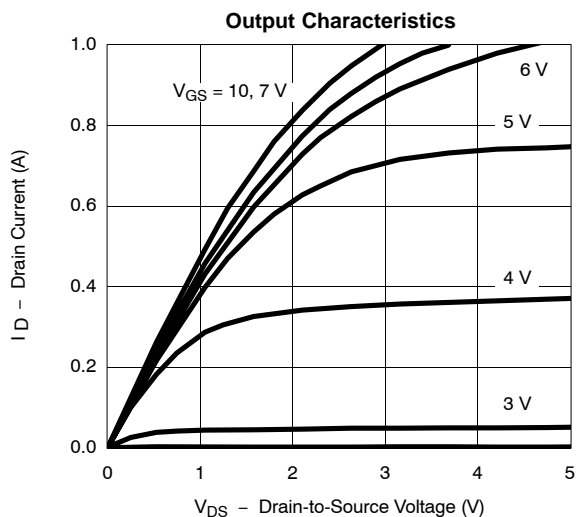


SPECIFICATIONS ^a (T _A = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 10 μA	60			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1	2.0	2.5	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 10 V			± 1	μA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V			1	
		V _{DS} = 60 V, V _{GS} = 0 V, T _J = 55 °C			10	
On-State Drain Current ^b	I _{D(on)}	V _{GS} = 10 V, V _{DS} = 7.5 V	0.5			A
		V _{GS} = 4.5 V, V _{DS} = 10 V	0.4			
		V _{GS} = 3 V, V _{DS} = 10 V	0.05			
Drain-Source On-Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 0.25 A		1.0	2.5	Ω
		V _{GS} = 4.5 V, I _D = 0.2 A		1.4	3	
		V _{GS} = 3 V, I _D = 0.025 A		3.0	8	
Forward Transconductance ^b	g _{fs}	V _{DS} = 10 V, I _D = 0.25 A		350		mS
Diode Forward Voltage	V _{SD}	I _S = 0.23 A, V _{GS} = 0 V		0.83	1.2	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = 10 V, V _{GS} = 4.5 V I _D = 0.25 A		0.4	0.6	nC
Gate-Source Charge	Q _{gs}			0.11		
Gate-Drain Charge	Q _{gd}			0.15		
Gate Resistance	R _g			173		Ω
Turn-On Time	t _{d(on)}	V _{DD} = 30 V, R _L = 150 Ω I _D = 0.2 A, V _{GEN} = 10V R _g = 10 Ω		3.8	10	ns
	t _r			4.8	15	
Turn-Off Time	t _{d(off)}			12.8	20	
	t _f			9.6	15	

Notes

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

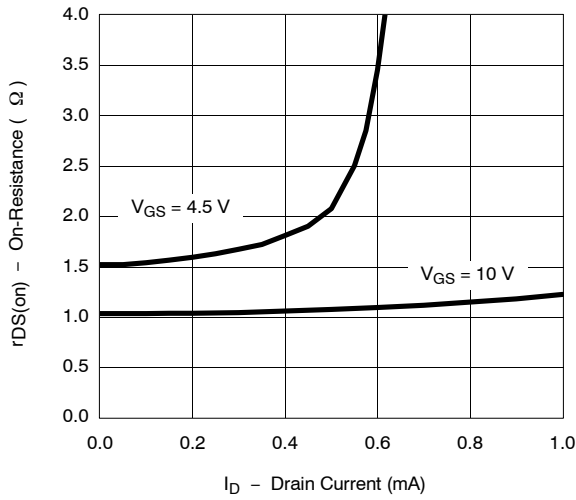
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



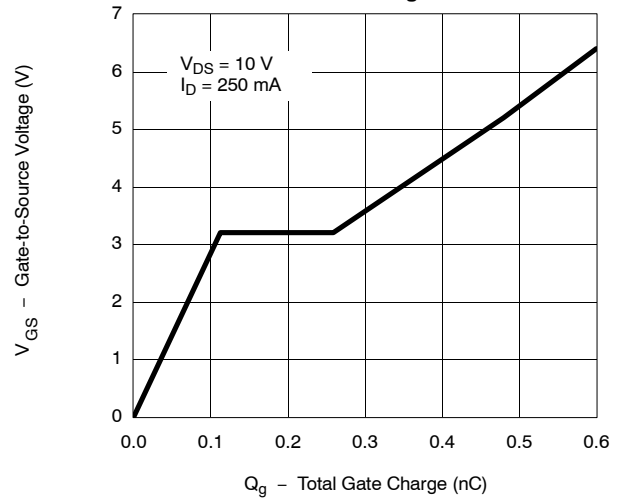


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

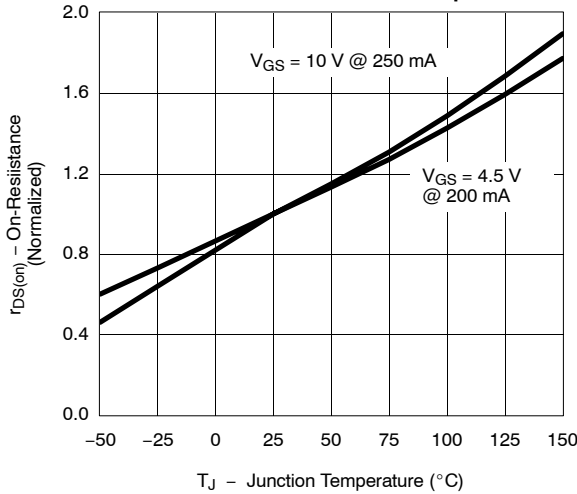
On-Resistance vs. Drain Current



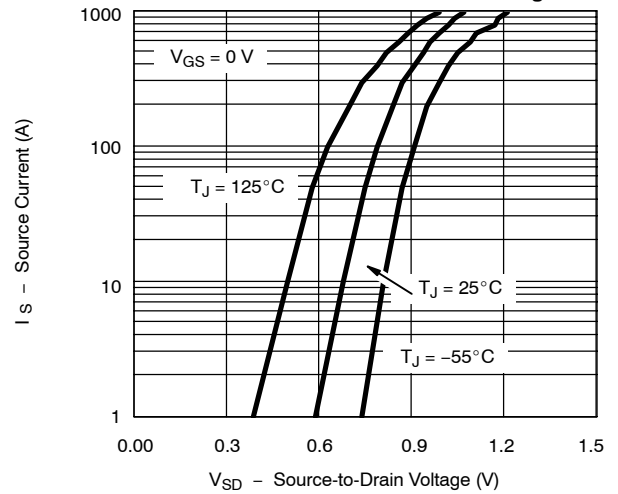
Gate Charge



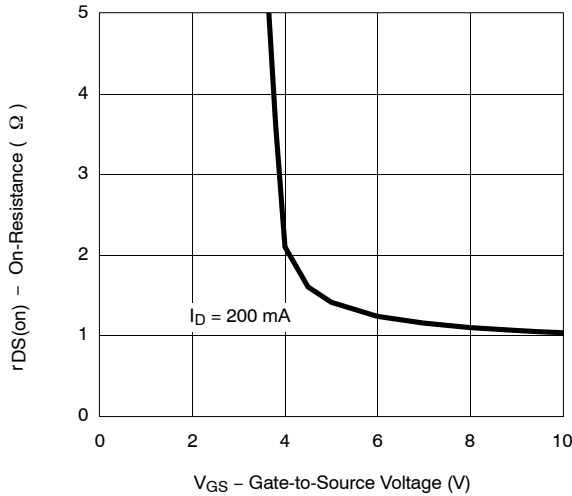
On-Resistance vs. Junction Temperature



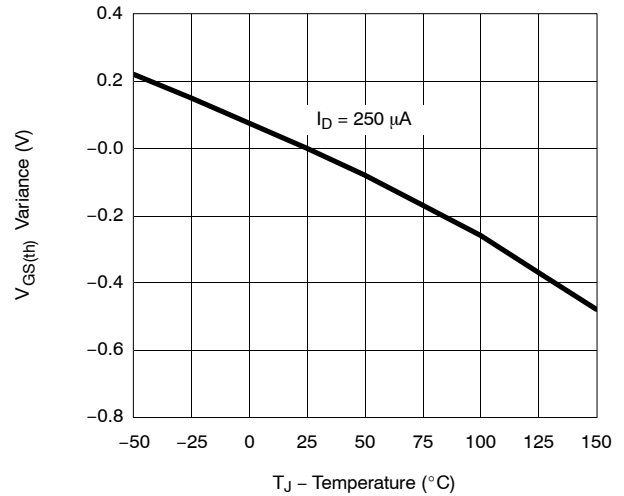
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-Source Voltage

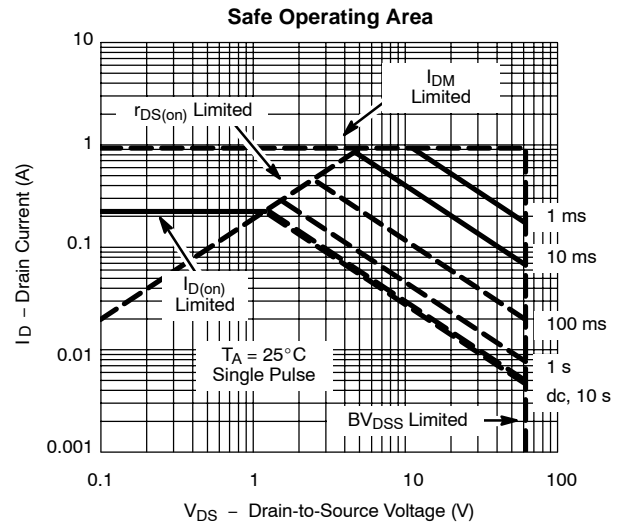
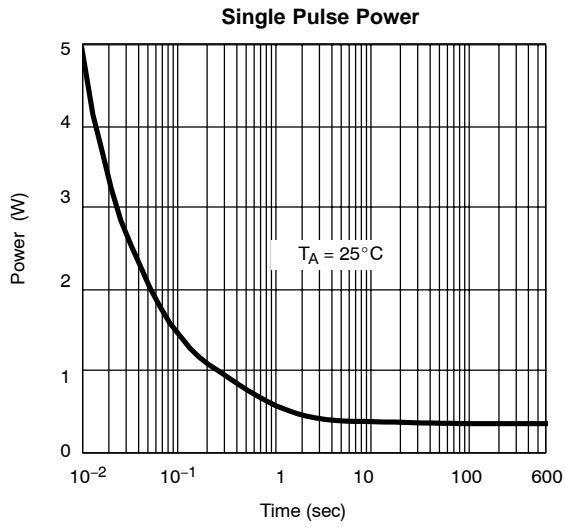


Threshold Voltage Variance over Temperature

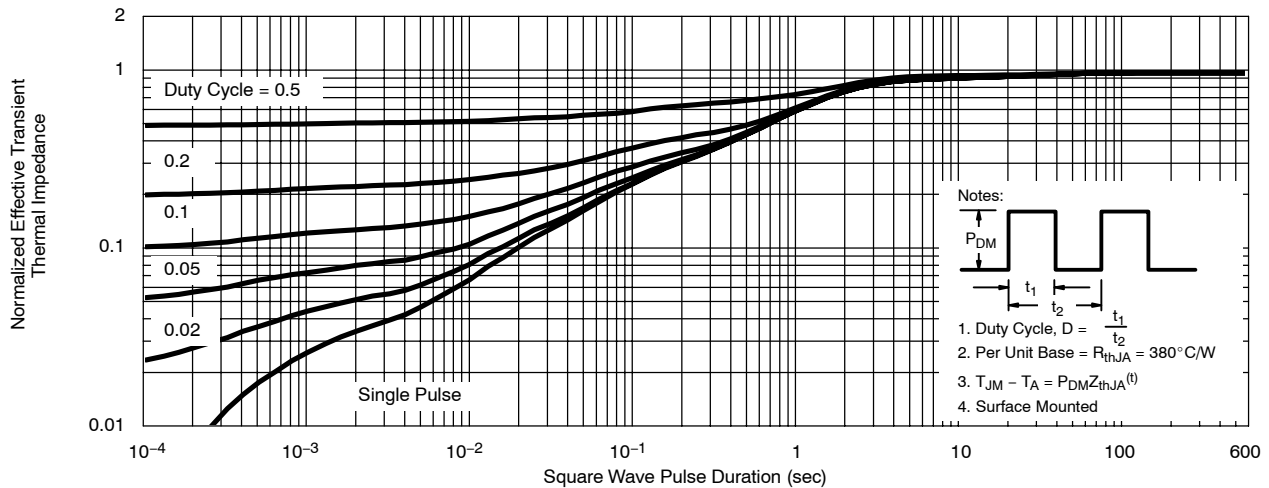




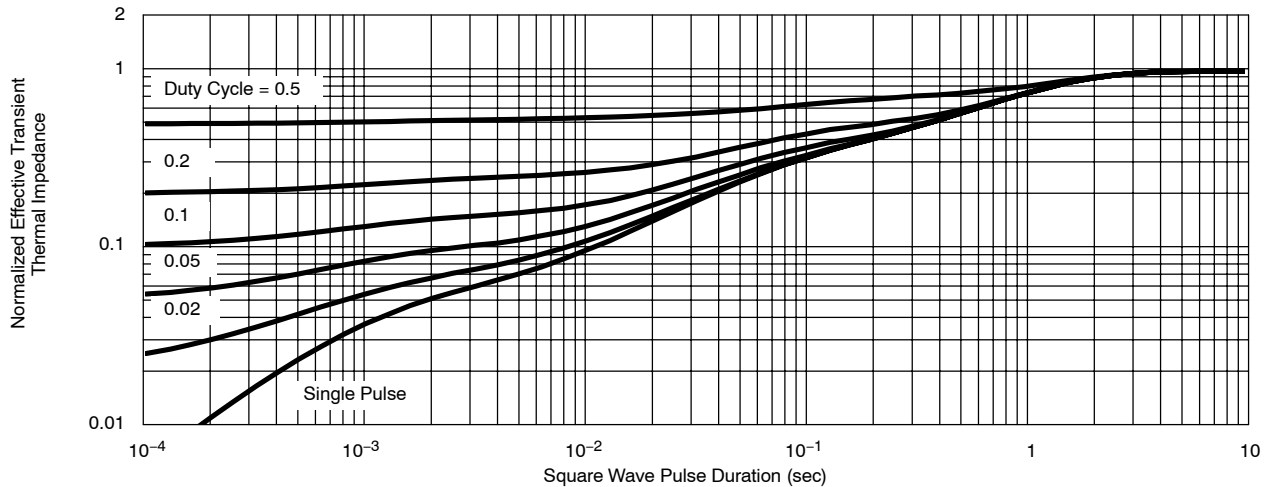
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot





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