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

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
30	0.075 @ V_{GS} = 10 V	3.6
	0.115 @ V_{GS} = 4.5 V	2.9

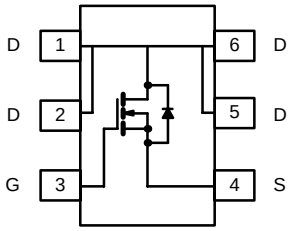
FEATURES

- TrenchFET® Power MOSFET
- Thermally Enhanced SC-70 Package
- PWM Optimized

APPLICATIONS

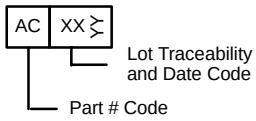
- Boost Converter in Portable Devices
  – Low Gate Charge (3 nC)
- Low Current Synchronous Rectifier

SOT-363
SC-70 (6-LEADS)



Top View

Marking Code



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	5 secs	Steady State	Unit
Drain-Source Voltage		V_{DS}	30		V
Gate-Source Voltage		V_{GS}	±20		
Continuous Drain Current (T_J = 150°C)[a]	T_A = 25°C	I_D	3.6	2.8	A
	T_A = 85°C		2.6	2.1	
Pulsed Drain Current		I_{DM}	10		
Continuous Diode Current (Diode Conduction)[a]		I_S	1.3	0.8	
Maximum Power Dissipation[a]	T_A = 25°C	P_D	1.6	1.0	W
	T_A = 85°C		0.8	0.5	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	–55 to 150		°C

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient[a]	t ≤ 5 sec	R_{thJA}	60	80	°C/W
	Steady State		100	125	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	34	45	

Notes
a. Surface Mounted on 1” x 1” FR4 Board.

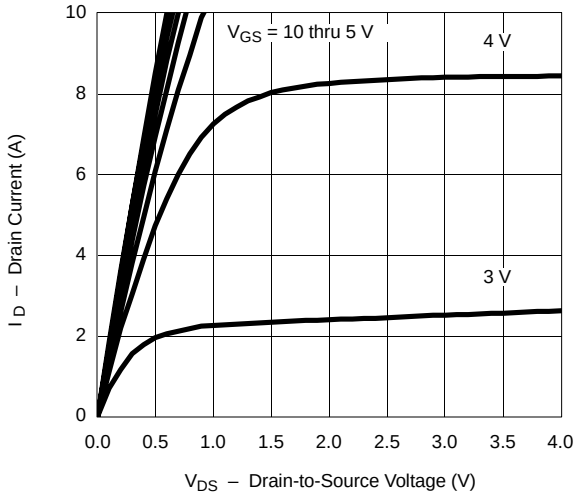
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 μA	0.80		2.5	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} = 24 V, V_{GS} = 0 V			1	μA
		V_{DS} = 24 V, V_{GS} = 0 V, T_J = 85°C			5	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 10 V	10			A
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 3.6 A		0.061	0.075	Ω
		V_{GS} = 4.5 V, I_D = 2.0 A		0.092	0.115	
Forward Transconductance[a]	g_{fs}	V_{DS} = 10 V, I_D = 3.6 A		5		S
Diode Forward Voltage[a]	V_{SD}	I_S = 1.3 A, V_{GS} = 0 V		0.78	1.2	V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = 15 V, V_{GS} = 4.5 V, I_D = 3.6 A		1.9	3	nC
Gate-Source Charge	Q_{gs}			0.75		
Gate-Drain Charge	Q_{gd}			0.75		
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		10	15	ns
Rise Time	t_r			12	18	
Turn-Off Delay Time	$t_{d(off)}$			15	22	
Fall Time	t_f			9	15	
Source-Drain Reverse Recovery	t_{rr}	I_F = 1.4 A. di/dt = 100/μs		40	70	

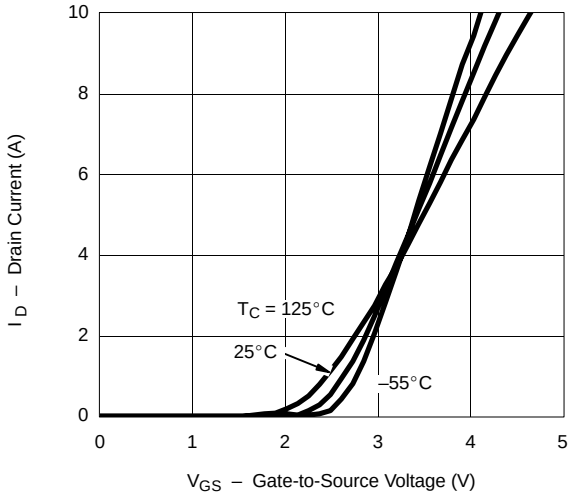
Notes
a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

Output Characteristics

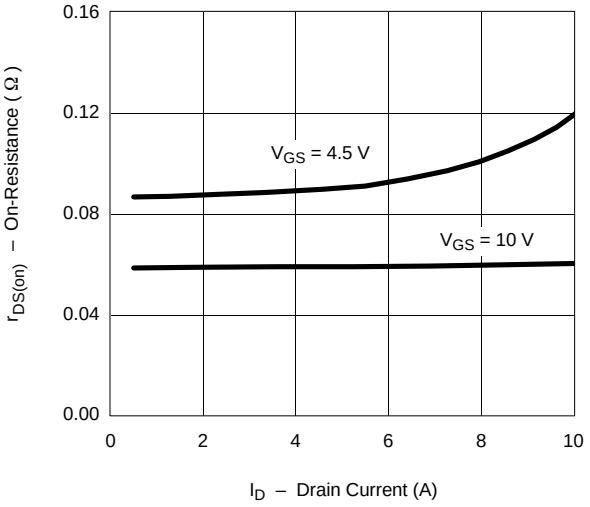


Transfer Characteristics

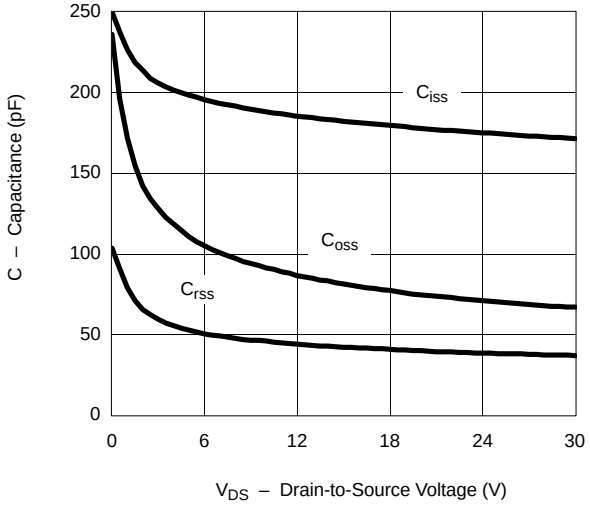


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

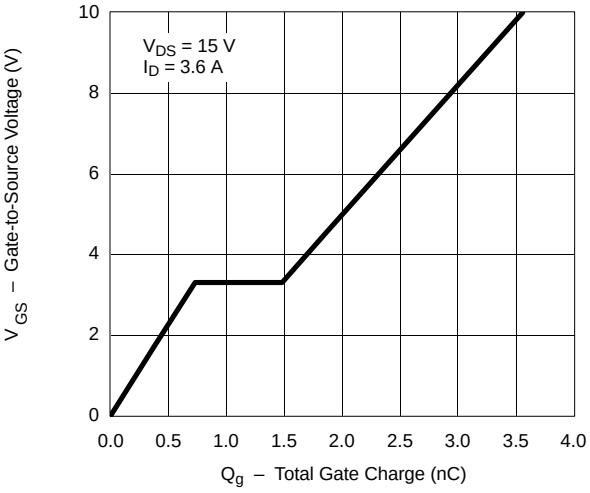
On-Resistance vs. Drain Current



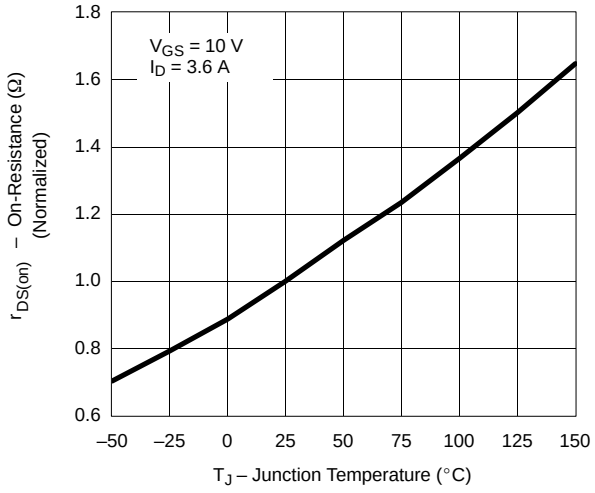
Capacitance



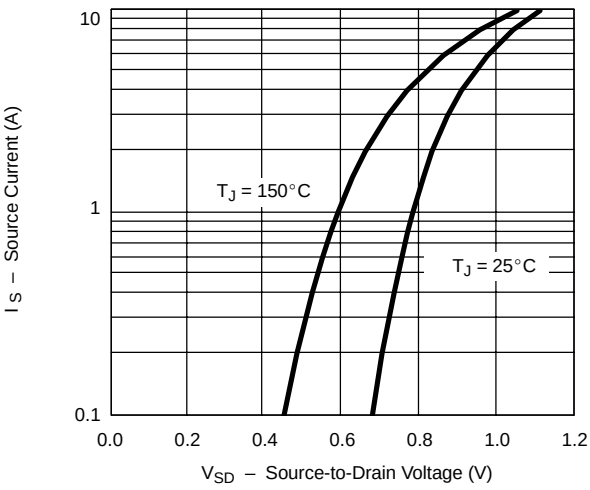
Gate Charge



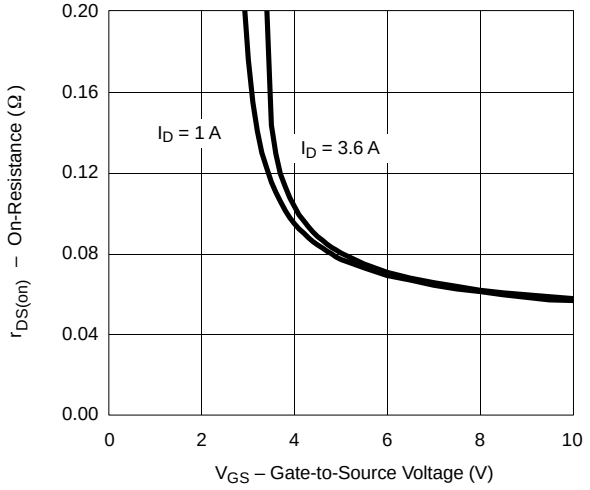
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

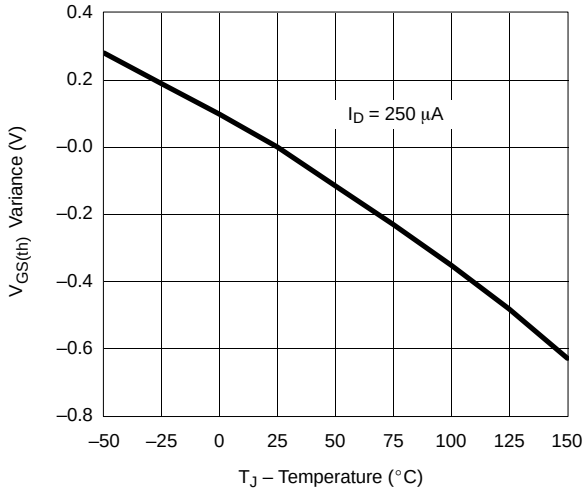


On-Resistance vs. Gate-to-Source Voltage

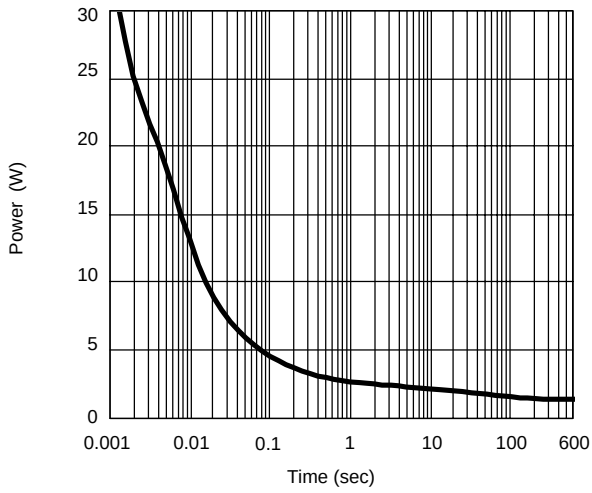


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

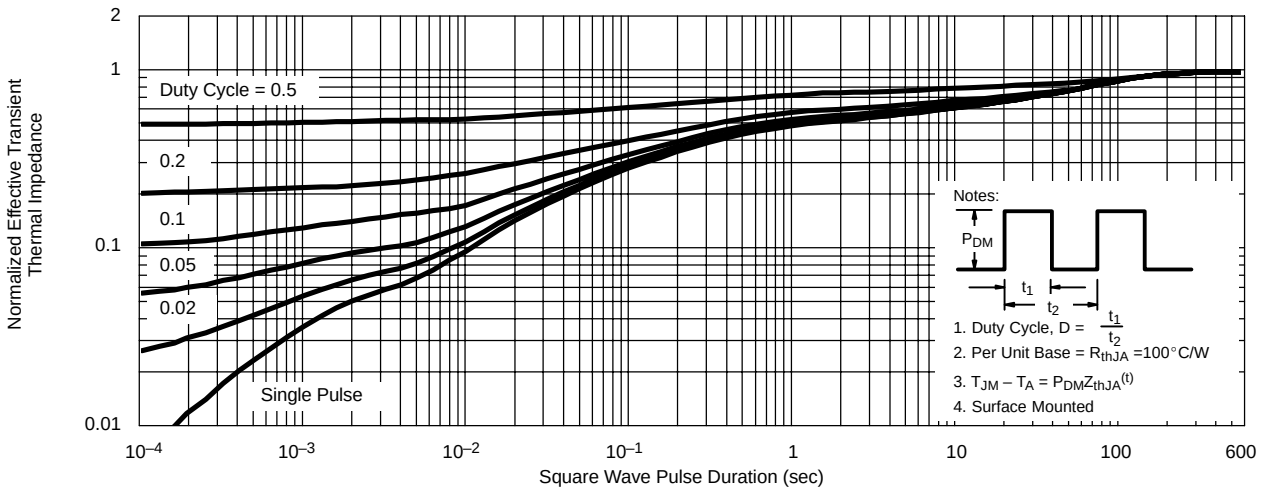
Threshold Voltage



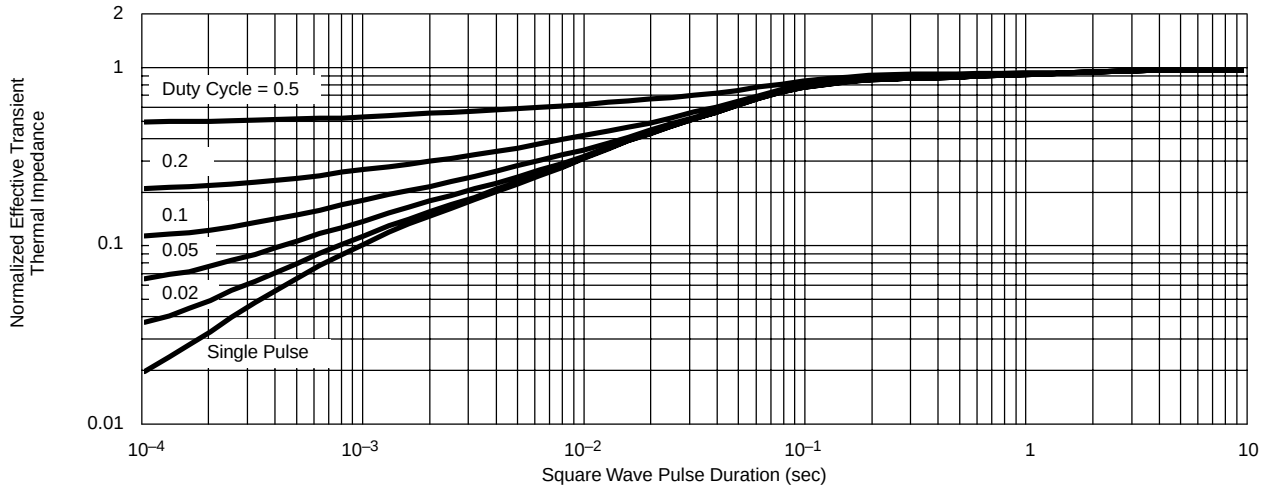
Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot



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