

## N-Channel 20-V (D-S) MOSFET

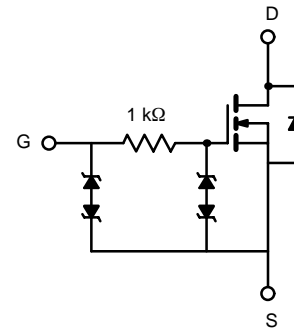
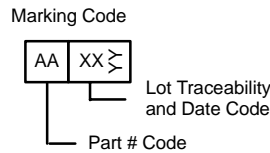
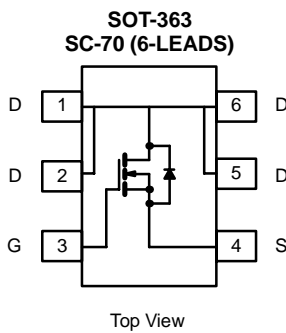
PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
20	0.070 @ $V_{GS} = 4.5$ V	3.7
	0.080 @ $V_{GS} = 2.5$ V	3.4
	0.100 @ $V_{GS} = 1.8$ V	3.0

### FEATURES

- TrenchFET® Power MOSFETS: 1.8-V Rated
- ESD Protected: 2000 V
- Thermally Enhanced SC-70 Package

### APPLICATIONS

- Load Switching
- PA Switch
- Level Switch



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)					
Parameter	Symbol	5 secs	Steady State	Unit	
Drain-Source Voltage	$V_{DS}$	20		V	
Gate-Source Voltage	$V_{GS}$	$\pm 12$			
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a</sup>	$I_D$	$T_A = 25^\circ\text{C}$	3.7	2.9	A
		$T_A = 85^\circ\text{C}$	2.6	2.0	
Pulsed Drain Current	$I_{DM}$	8			
Continuous Diode Current (Diode Conduction) <sup>a</sup>	$I_S$	1.4	0.9		
Maximum Power Dissipation <sup>a</sup>	$P_D$	$T_A = 25^\circ\text{C}$	1.56	1.0	W
		$T_A = 85^\circ\text{C}$	0.81	0.52	
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 <sup>a</sup>	$R_{thJA}$	$t \leq 5$ sec	60	80	$^\circ\text{C/W}$
		Steady State	100	125	
Maximum Junction-to-Foot (Drain)	$R_{thJF}$	34	45		

Notes

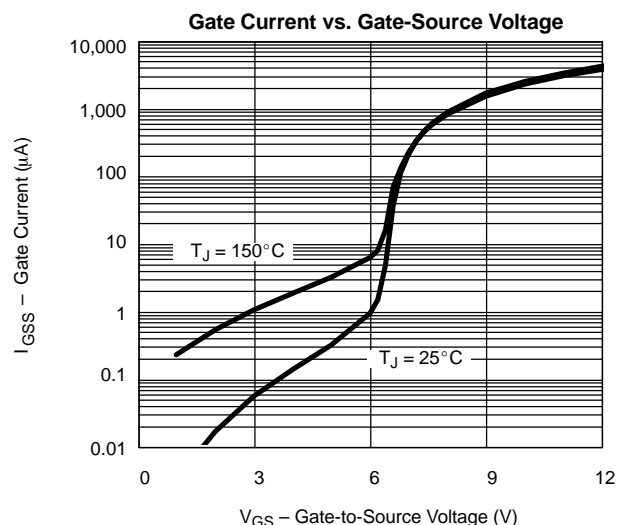
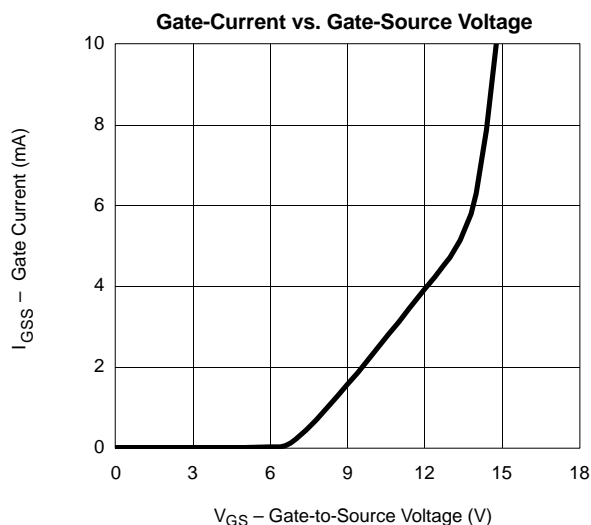
a. Surface Mounted on 1" x 1" FR4 Board.

**SPECIFICATIONS ( $T_J = 25^\circ\text{C}$  UNLESS OTHERWISE NOTED)**

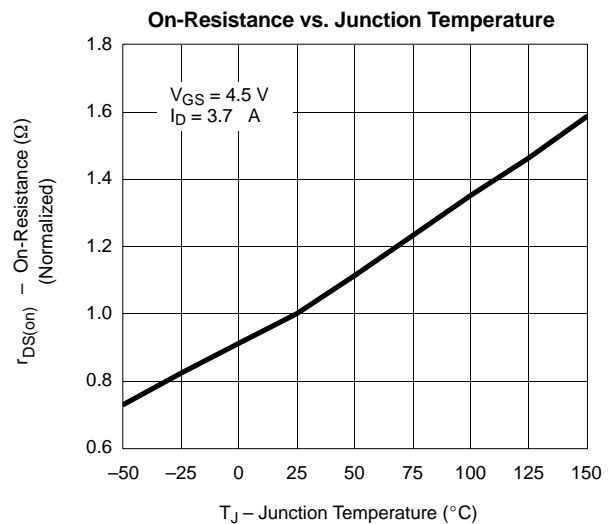
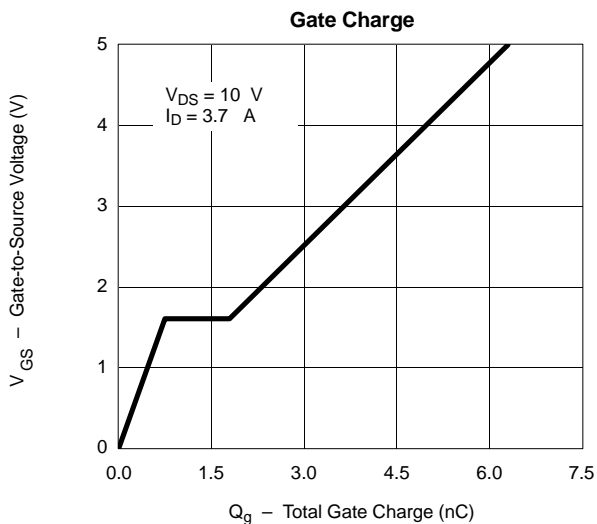
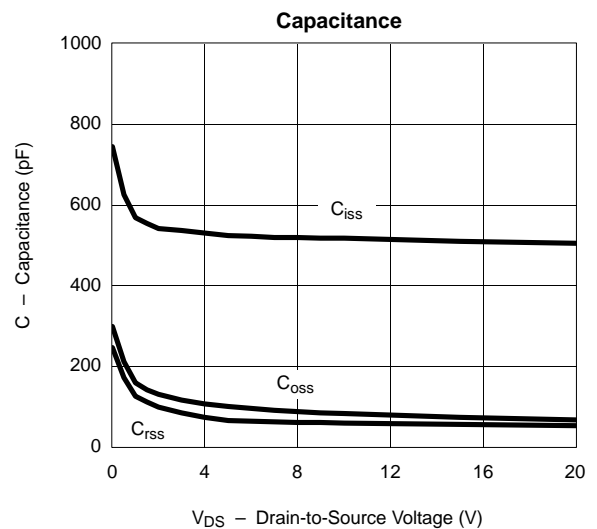
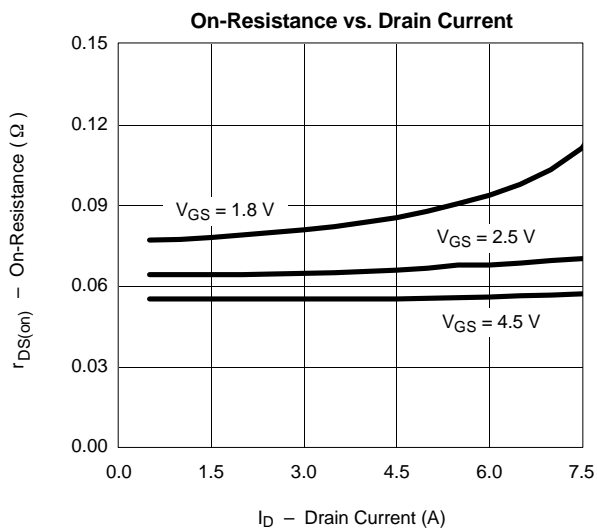
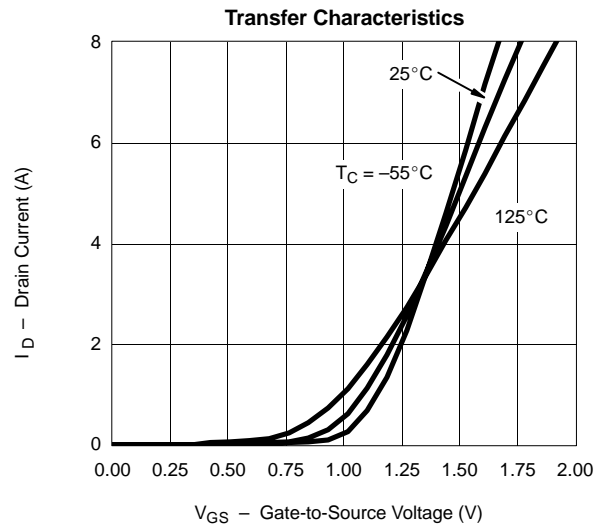
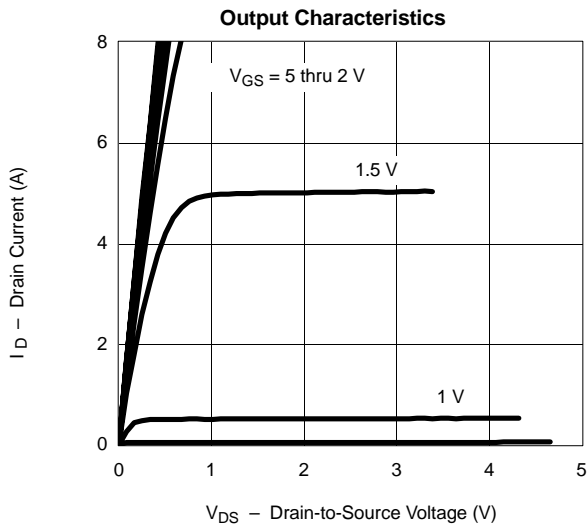
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	0.45			V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 4.5 \text{ V}$			$\pm 1$	$\mu\text{A}$
		$V_{DS} = 0 \text{ V}, V_{GS} = \pm 12 \text{ V}$			$\pm 10$	mA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 16 \text{ V}, V_{GS} = 0 \text{ V}$			1	$\mu\text{A}$
		$V_{DS} = 16 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 85^\circ\text{C}$			5	
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	$V_{DS} = 5 \text{ V}, V_{GS} = 4.5 \text{ V}$	4			A
Drain-Source On-State Resistance <sup>a</sup>	$r_{DS(on)}$	$V_{GS} = 4.5 \text{ V}, I_D = 3.7 \text{ A}$		0.055	0.070	$\Omega$
		$V_{GS} = 2.5 \text{ V}, I_D = 3.4 \text{ A}$		0.065	0.080	
		$V_{GS} = 1.8 \text{ V}, I_D = 1.7 \text{ A}$		0.080	0.100	
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = 10 \text{ V}, I_D = 3.7 \text{ A}$		10		S
Diode Forward Voltage <sup>a</sup>	$V_{SD}$	$I_S = 1.4 \text{ A}, V_{GS} = 0 \text{ V}$		0.75	1.1	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = 10 \text{ V}, V_{GS} = 4.5 \text{ V}, I_D = 3.7 \text{ A}$		5.6	8	nC
Gate-Source Charge	$Q_{gs}$			0.75		
Gate-Drain Charge	$Q_{gd}$			1.10		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 10 \text{ V}, R_L = 10 \Omega$ $I_D \cong 1 \text{ A}, V_{GEN} = 4.5 \text{ V}, R_G = 6 \Omega$		0.15	0.25	$\mu\text{s}$
Rise Time	$t_r$			0.4	0.6	
Turn-Off Delay Time	$t_{d(off)}$			1.9	2.8	
Fall Time	$t_f$			1.2	1.8	

## Notes

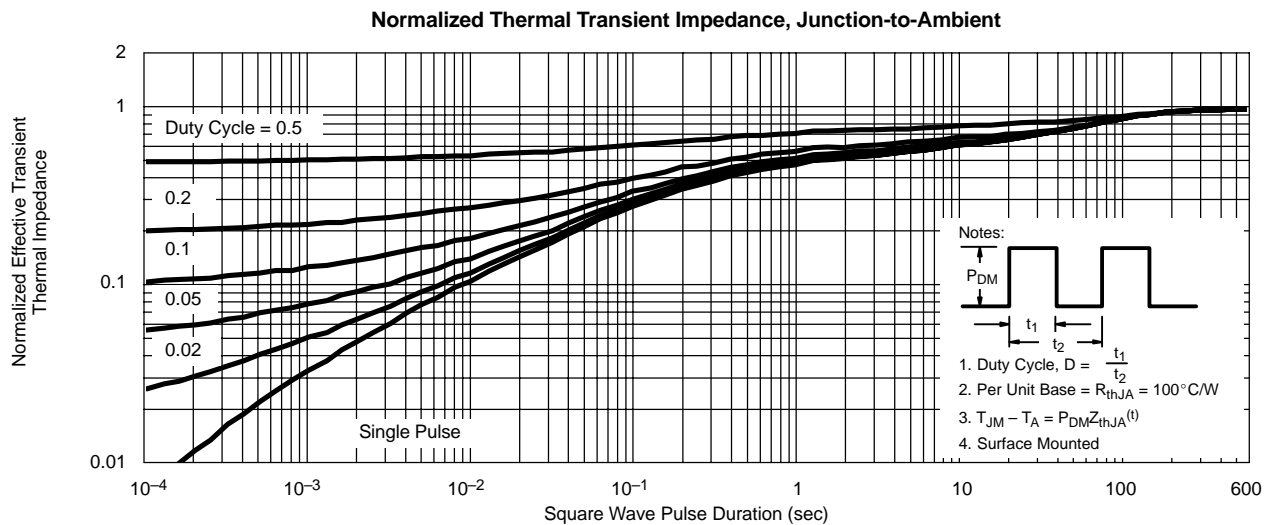
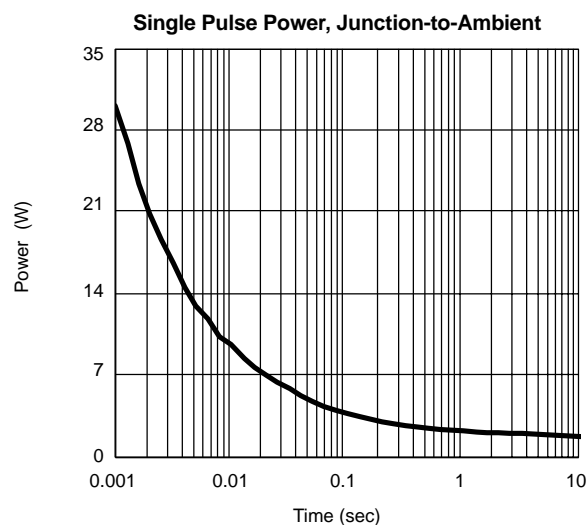
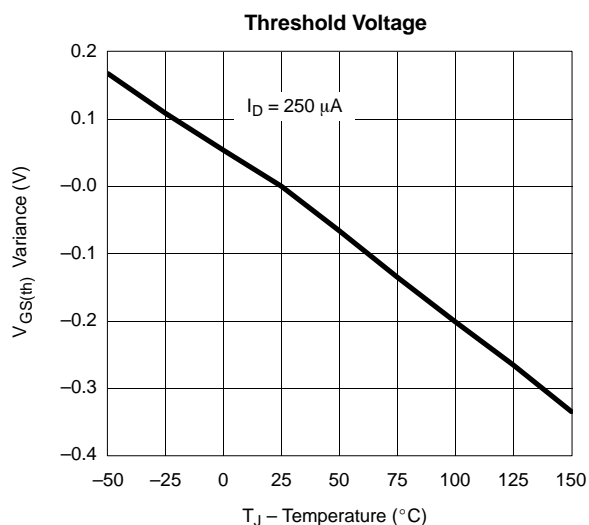
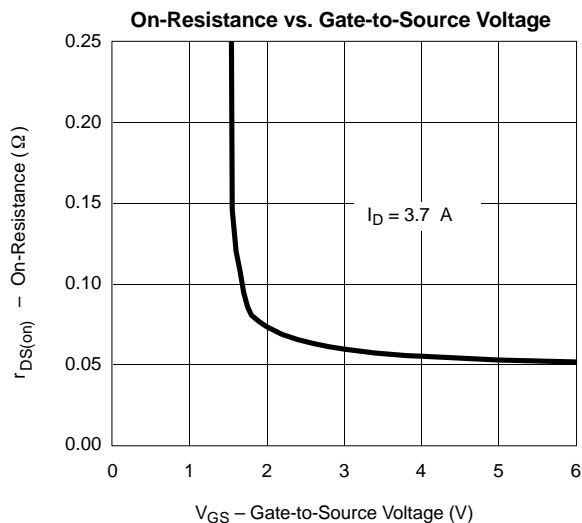
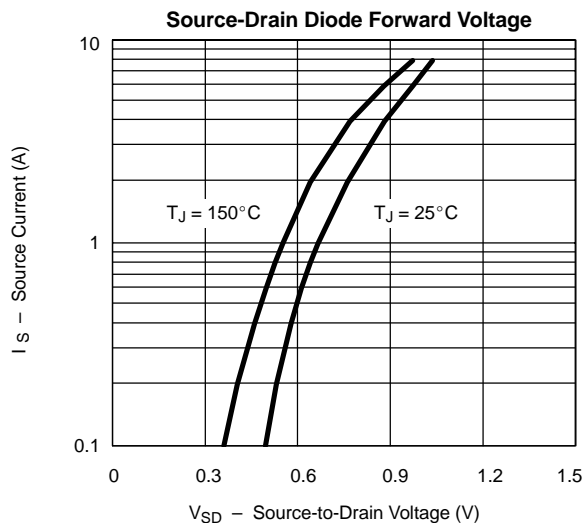
- a. Pulse test; pulse width  $\leq 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .  
b. Guaranteed by design, not subject to production testing.

**TYPICAL CHARACTERISTICS ( $25^\circ\text{C}$  UNLESS NOTED)**

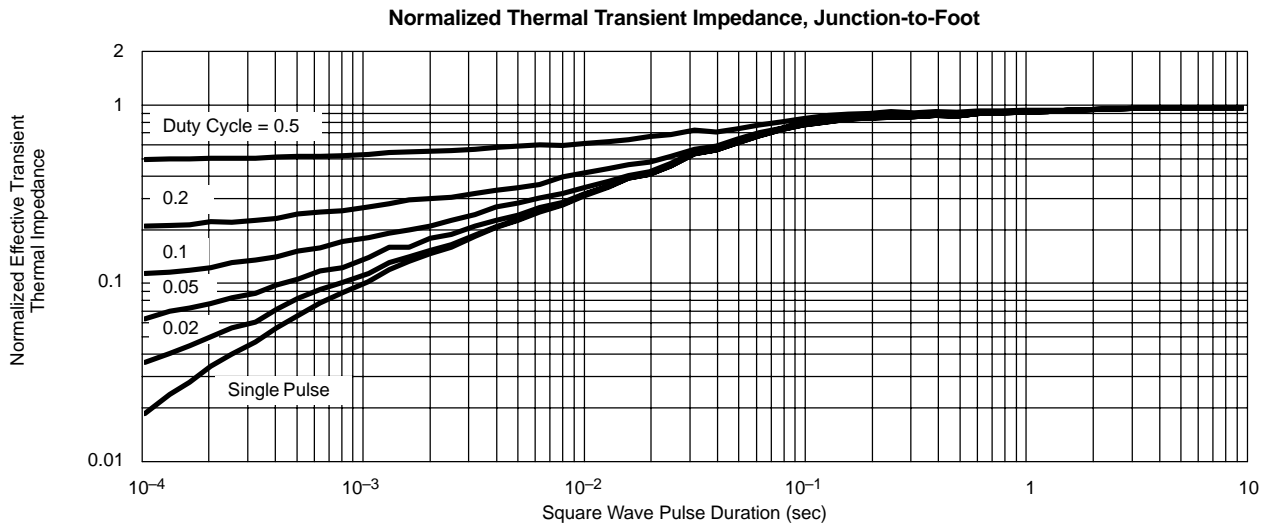
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