



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

PRODUCT SUMMARY

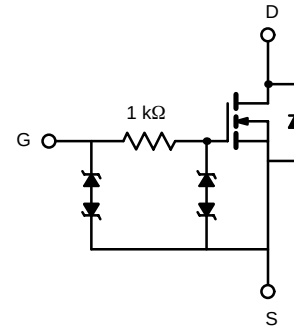
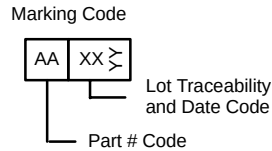
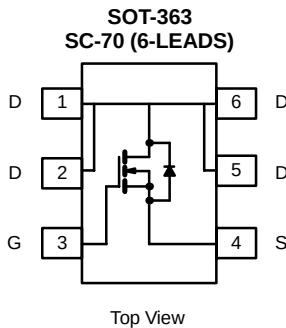
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
20	0.070 @ $V_{GS} = 4.5$ V	3.7
	0.080 @ $V_{GS} = 2.5$ V	3.4
	0.100 @ $V_{GS} = 1.8$ V	3.0

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}	± 12		
Continuous Drain Current (T _J = 150°C) ^a	T _A = 25°C	I _D	3.7	2.9	A
	T _A = 85°C		2.6	2.0	
Pulsed Drain Current		I _{DM}	8		
Continuous Diode Current (Diode Conduction) ^a		I _S	1.4	0.9	
Maximum Power Dissipation ^a	T _A = 25°C	P _D	1.56	1.0	W
	T _A = 85°C		0.81	0.52	
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	$t \leq 5$ sec	R_{thJA}	60	80	$^\circ\text{C/W}$
	Steady State		100	125	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	34	45	

Notes

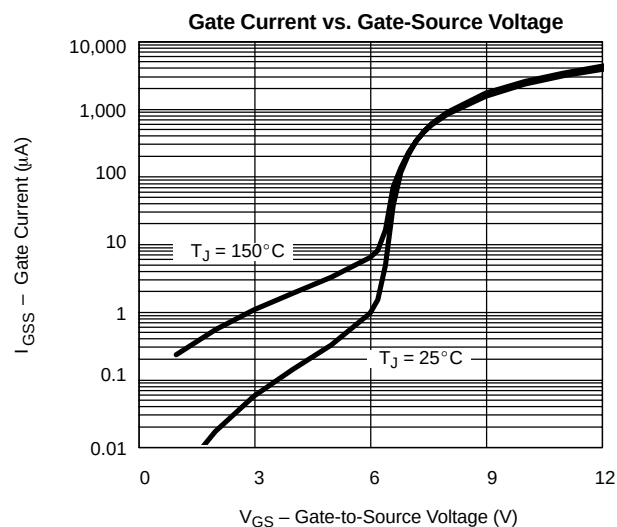
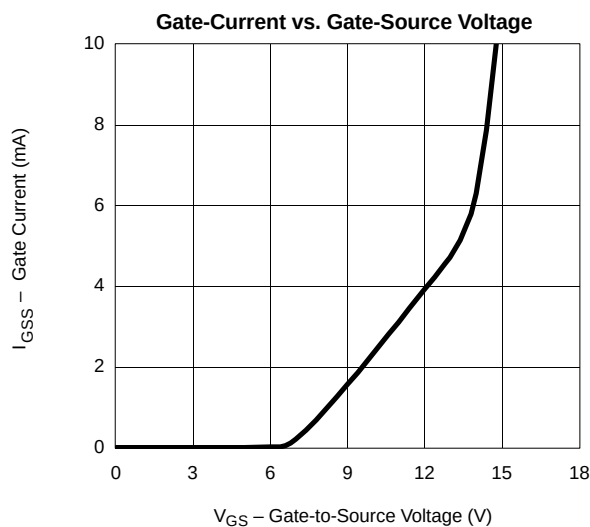
a. Surface Mounted on 1" x 1" FR4 Board.

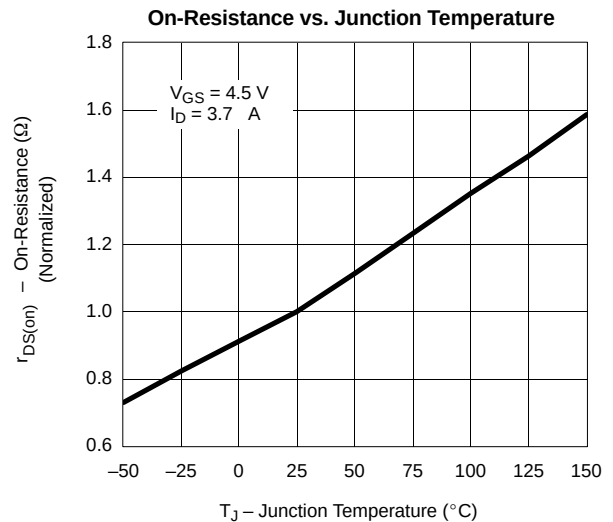
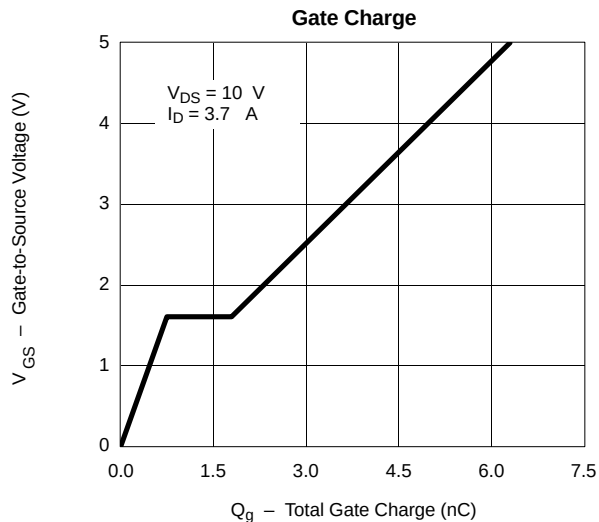
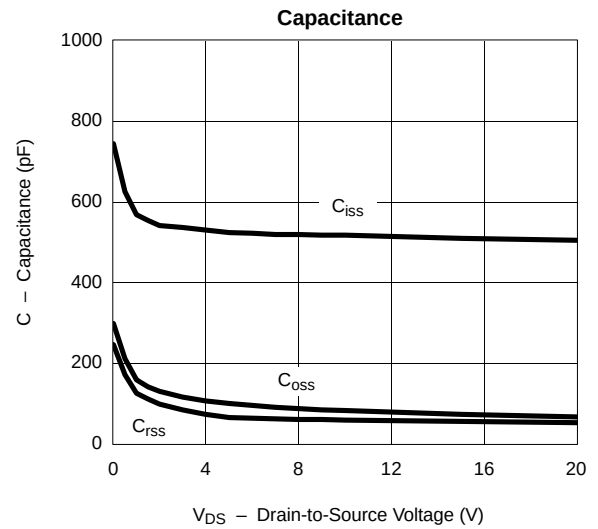
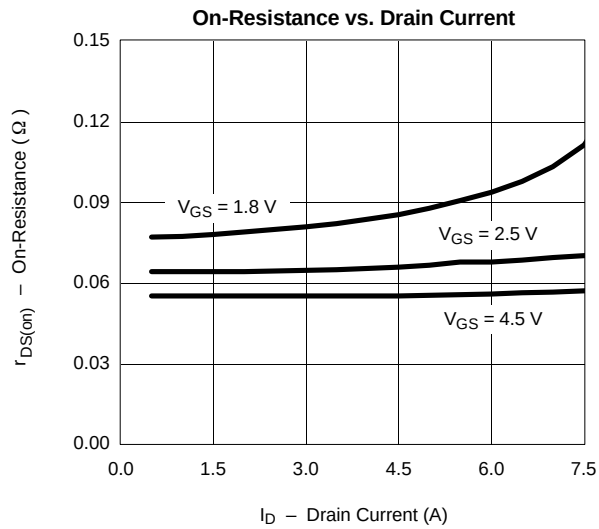
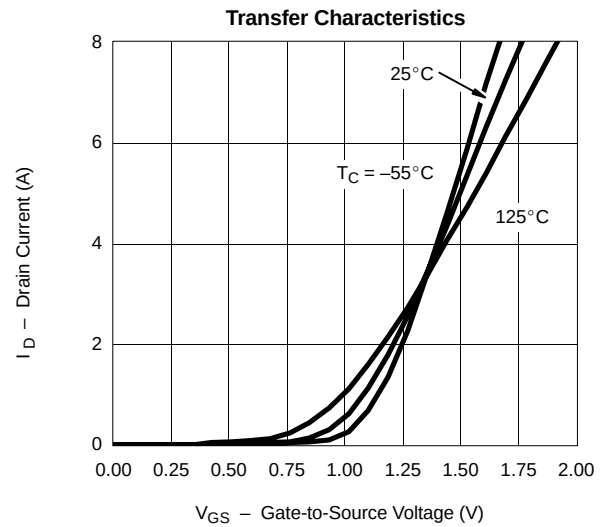
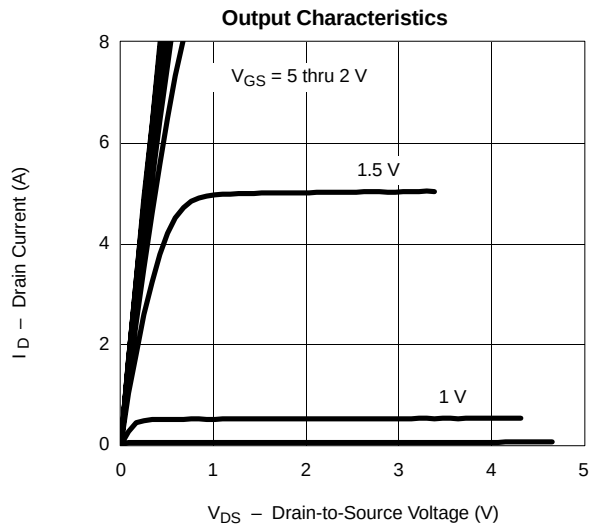
SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

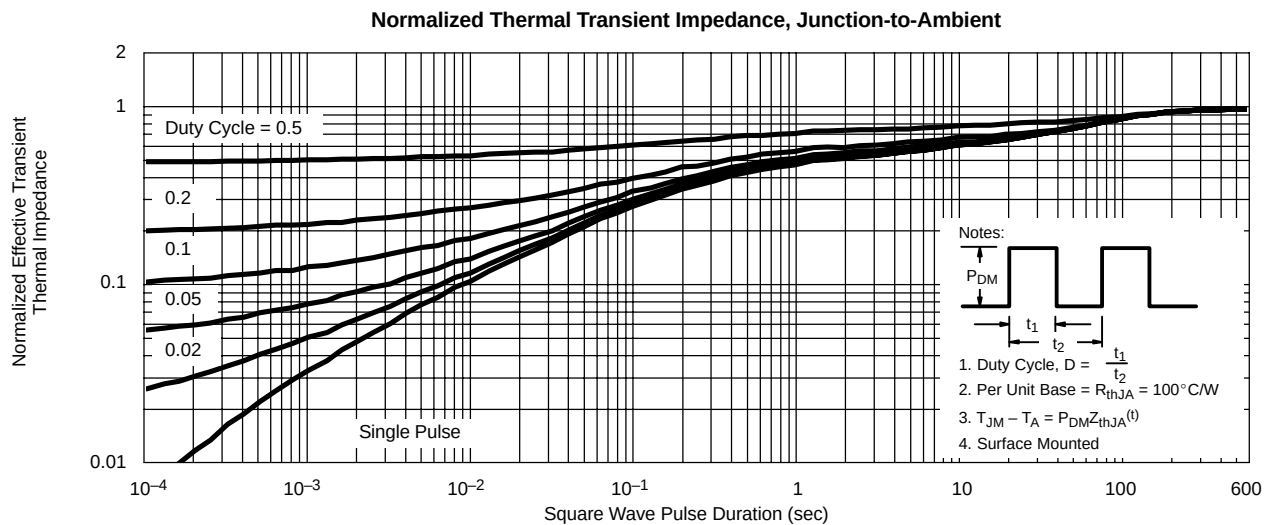
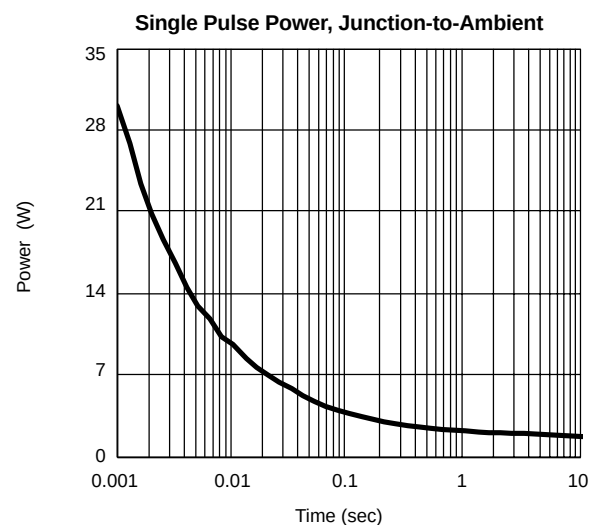
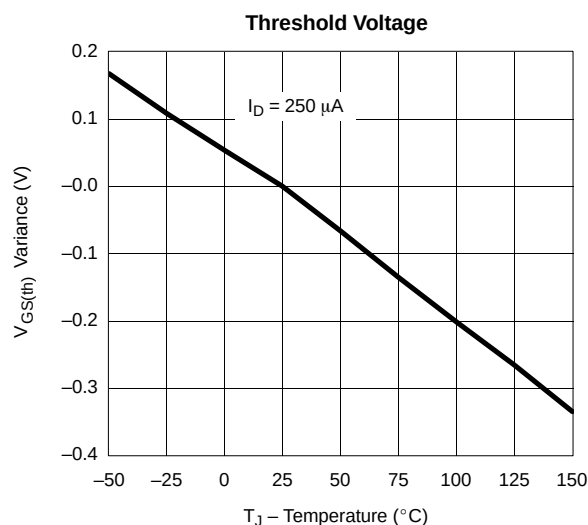
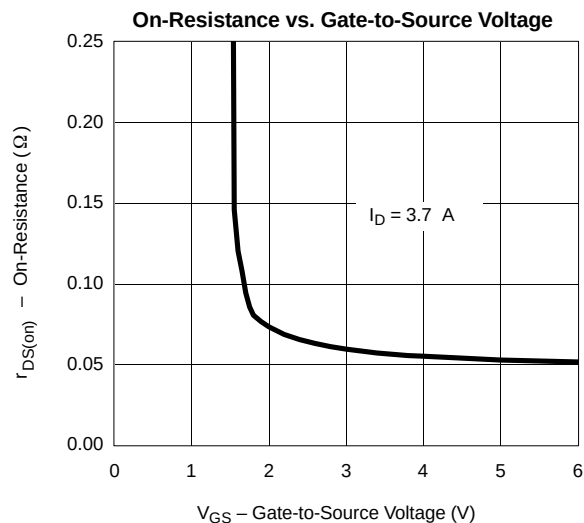
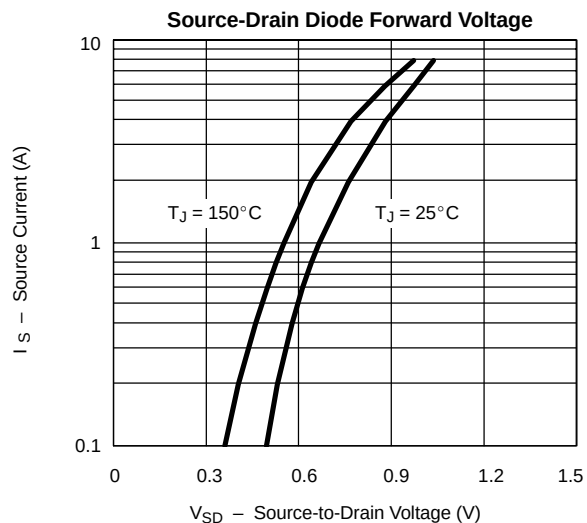
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\ \mu\text{A}$	0.45			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\ \text{V}$, $V_{GS} = \pm 4.5\ \text{V}$			± 1	μA
		$V_{DS} = 0\ \text{V}$, $V_{GS} = \pm 12\ \text{V}$			± 10	mA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 16\ \text{V}$, $V_{GS} = 0\ \text{V}$			1	μA
		$V_{DS} = 16\ \text{V}$, $V_{GS} = 0\ \text{V}$, $T_J = 85^\circ\text{C}$			5	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} = 5\ \text{V}$, $V_{GS} = 4.5\ \text{V}$	4			A
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = 4.5\ \text{V}$, $I_D = 3.7\ \text{A}$		0.055	0.070	Ω
		$V_{GS} = 2.5\ \text{V}$, $I_D = 3.4\ \text{A}$		0.065	0.080	
		$V_{GS} = 1.8\ \text{V}$, $I_D = 1.7\ \text{A}$		0.080	0.100	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 10\ \text{V}$, $I_D = 3.7\ \text{A}$		10		S
Diode Forward Voltage ^a	V_{SD}	$I_S = 1.4\ \text{A}$, $V_{GS} = 0\ \text{V}$		0.75	1.1	V
Dynamic^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	μs
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°C UNLESS NOTED)

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