

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

Key Features:

- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- 2mm x 2mm footprint DFN package
- RDS rated at 1.8V Gate-drive

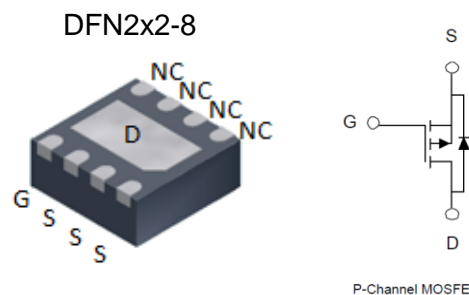
Typical Applications:

- Battery Powered Instruments
- Portable Computing
- Mobile Phones
- GPS Units and Media Players



RoHS
COMPLIANT
HALOGEN
FREE

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (m Ω)	I_D (A)
-20	42 @ $V_{GS} = -4.5V$	-6.6
	57 @ $V_{GS} = -2.5V$	-5.7
	86 @ $V_{GS} = -1.8V$	-1



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 8	
Continuous Drain Current ^a	$T_A = 25^\circ\text{C}$	I_D	-6.6	A
	$T_A = 70^\circ\text{C}$		-5.3	
Pulsed Drain Current ^b		I_{DM}	-20	
Continuous Source Current (Diode Conduction) ^a		I_S	4	A
Power Dissipation ^a	$T_A = 25^\circ\text{C}$	P_D	3	W
	$T_A = 70^\circ\text{C}$		1.92	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS				
Parameter		Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$t \leq 5$ sec	$R_{\theta JA}$	40	$^\circ\text{C/W}$
	Steady State		90	

Notes

- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature

Electrical Characteristics

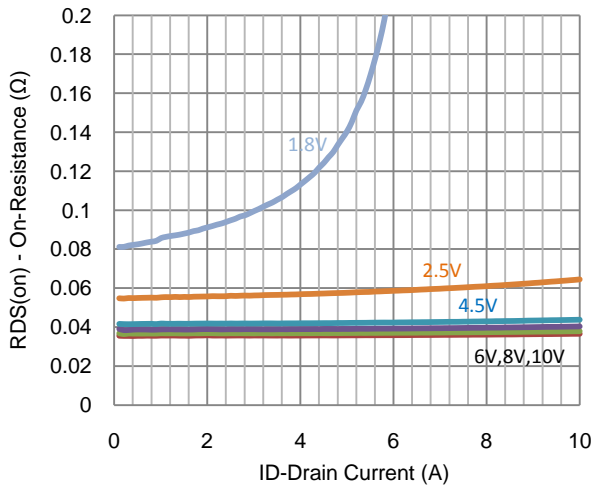
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu A$	-0.4			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 V, V_{GS} = -8 V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -16 V, V_{GS} = 0 V$			1	uA
		$V_{DS} = -16 V, V_{GS} = 0 V, T_J = 55^\circ C$			25	
On-State Drain Current	$I_{D(on)}$	$V_{DS} = -5 V, V_{GS} = -4.5 V$	-10			A
Drain-Source On-Resistance	$r_{DS(on)}$	$V_{GS} = -4.5 V, I_D = -4.4 A$			42	m Ω
		$V_{GS} = -2.5 V, I_D = -3.6 A$			57	
		$V_{GS} = -1.8 V, I_D = -1 A$			86	
Forward Transconductance	g_{fs}	$V_{DS} = -15 V, I_D = -4.4 A$		20		S
Diode Forward Voltage	V_{SD}	$I_S = -2 A, V_{GS} = 0 V$		0.83		V
Dynamic						
Total Gate Charge	Q_g	$V_{DS} = -10 V, V_{GS} = -4.5 V,$ $I_D = -4.4 A$		6.8		nC
Gate-Source Charge	Q_{gs}			1.8		
Gate-Drain Charge	Q_{gd}			2.3		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -10 V, R_L = 2.3 \Omega, I_D = -4.4 A,$ $V_{GEN} = -4.5 V, R_{GEN} = 6 \Omega$		6		ns
Rise Time	t_r			6		
Turn-Off Delay Time	$t_{d(off)}$			23		
Fall Time	t_f			15		
Input Capacitance	C_{iss}	$V_{DS} = -15 V, V_{GS} = 0 V, f = 1 MHz$		837		pF
Output Capacitance	C_{oss}			98		
Reverse Transfer Capacitance	C_{rss}			75		
Gate Resistance	R_g	$f = 1 MHz$		3.7		Ω

Notes

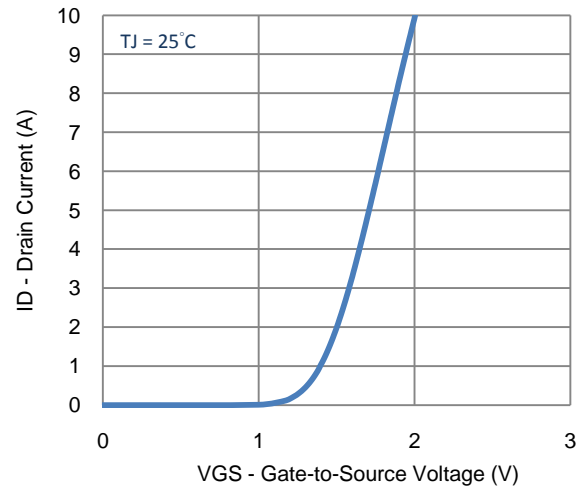
- Pulse test: PW \leq 300us duty cycle \leq 2%.
- Guaranteed by design, not subject to production testing.

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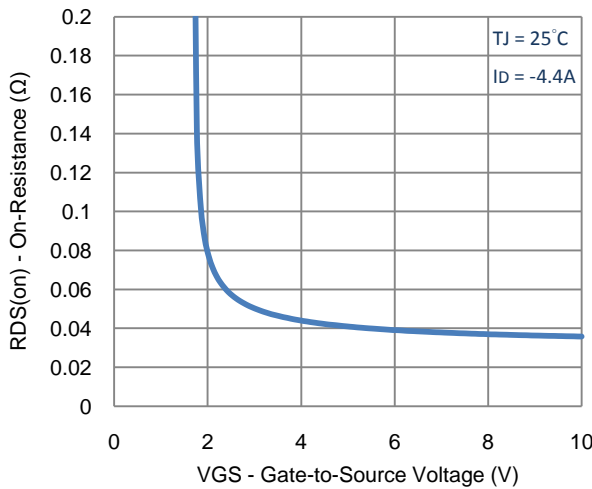
Typical Electrical Characteristics



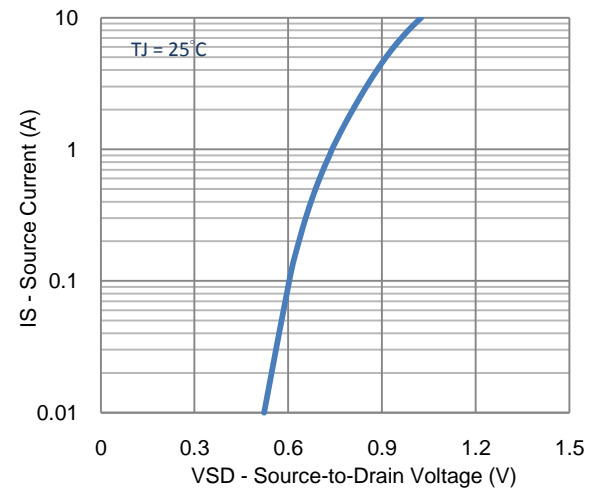
1. On-Resistance vs. Drain Current



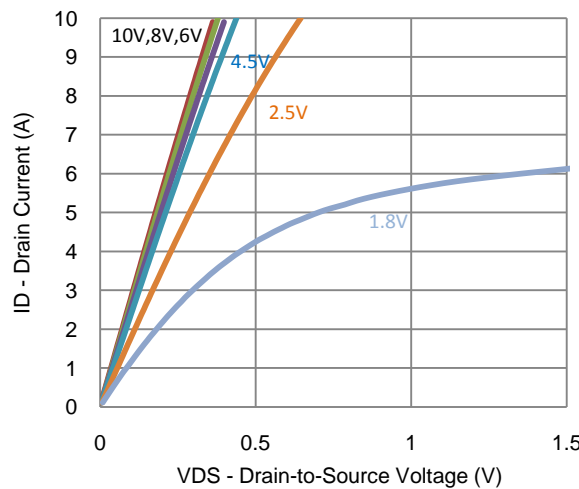
2. Transfer Characteristics



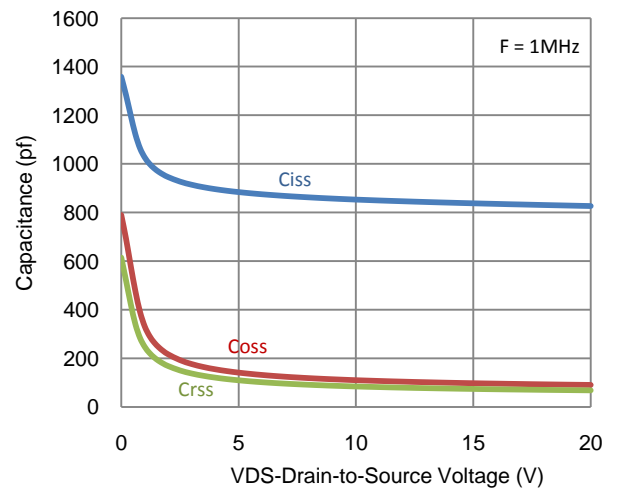
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

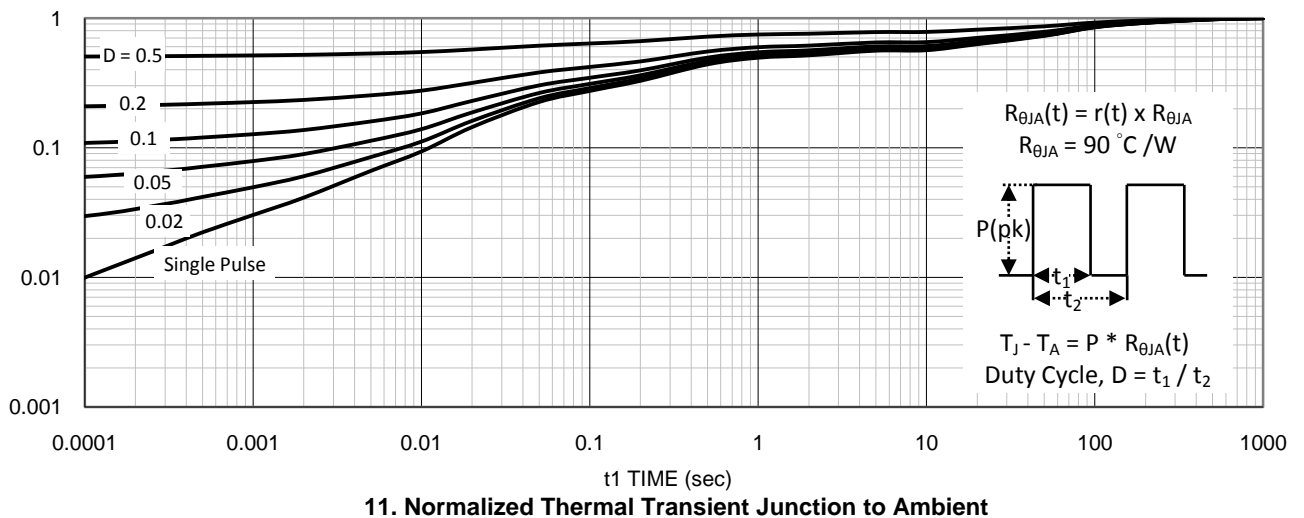
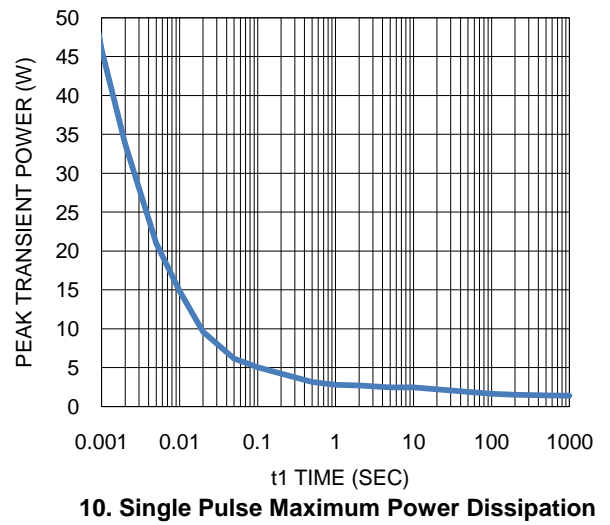
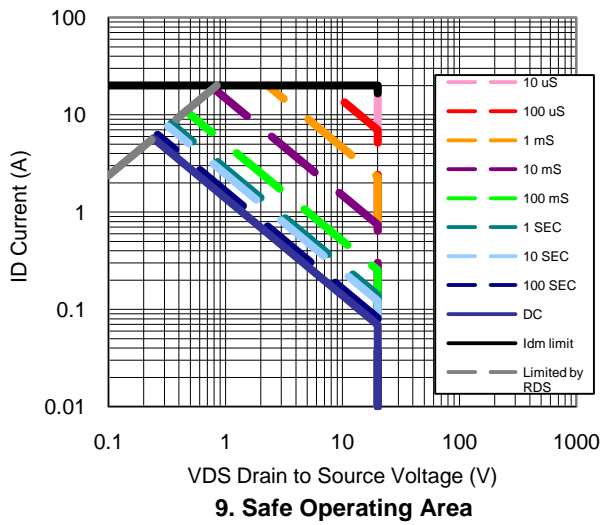
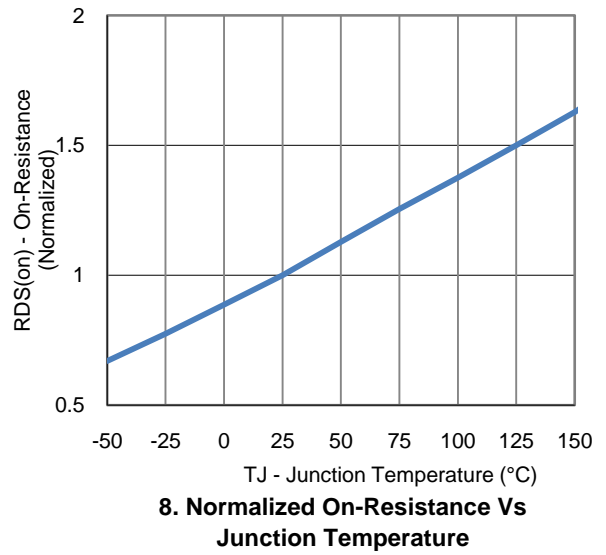
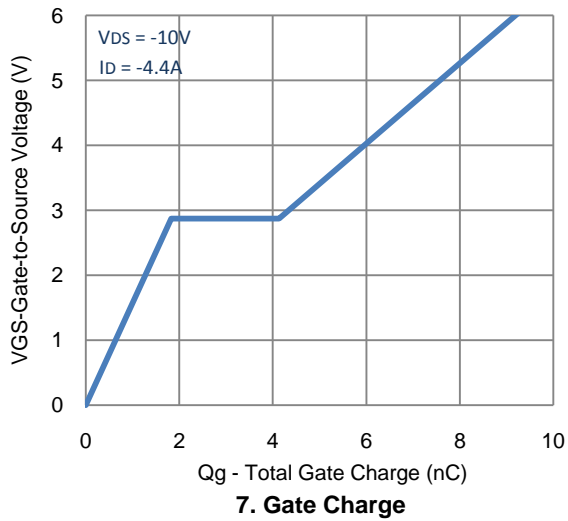


5. Output Characteristics



6. Capacitance

Typical Electrical Characteristics



Package Information

