

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

### Key Features:

- Low  $r_{DS(on)}$  trench technology
- Low thermal impedance
- Fast switching speed

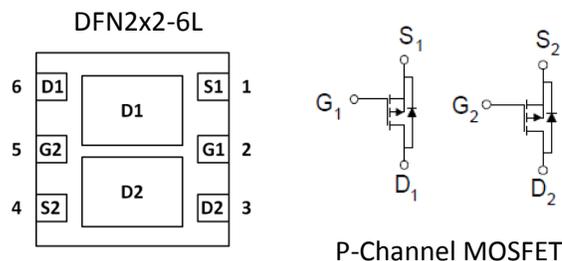
### Typical Applications:

- 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 $\Omega$ )	$I_D$ (A)
-20	79 @ $V_{GS} = -4.5V$	-4.2
	110 @ $V_{GS} = -2.5V$	-3.6



### 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	$V_{GS}$	$\pm 8$	
Continuous Drain Current <sup>a</sup>	$I_D$	$T_A=25^\circ\text{C}$	-4.2
		$T_A=70^\circ\text{C}$	-3.3
Pulsed Drain Current <sup>b</sup>	$I_{DM}$	-10	A
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	-2.3	A
Power Dissipation <sup>a</sup>	$P_D$	$T_A=25^\circ\text{C}$	2.1
		$T_A=70^\circ\text{C}$	1.3
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 <sup>a</sup>	$R_{\theta JA}$	t $\leq$ 10 sec	60
		Steady State	110

### Notes

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

## Electrical Characteristics

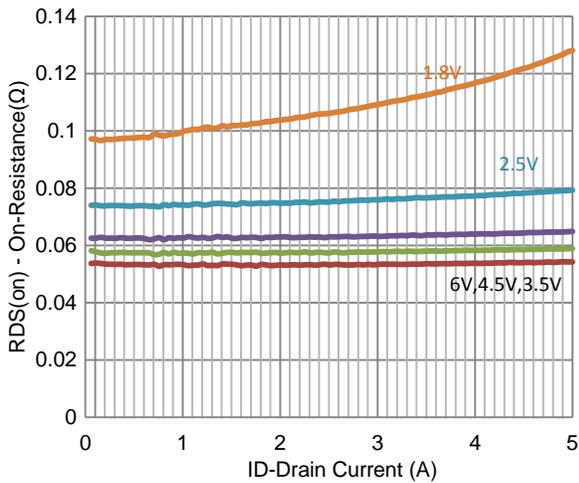
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static</b>						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu A$	-0.4			V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 V, V_{GS} = \pm 8 V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -16 V, V_{GS} = 0 V$			1	uA
		$V_{DS} = -16 V, V_{GS} = 0 V, T_J = 55^\circ C$			10	
On-State Drain Current	$I_{D(on)}$	$V_{DS} = -5 V, V_{GS} = -4.5 V$	-10			A
Drain-Source On-Resistance	$r_{DS(on)}$	$V_{GS} = -4.5 V, I_D = -3.4 A$			79	m $\Omega$
		$V_{GS} = -2.5 V, I_D = -2.9 A$			110	
Forward Transconductance	$g_{fs}$	$V_{DS} = -15 V, I_D = -3.4 A$		10		S
Diode Forward Voltage	$V_{SD}$	$I_S = -1.2 A, V_{GS} = 0 V$		-0.74		V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS} = -10 V, V_{GS} = -4.5 V,$ $I_D = -3.4 A$		7.6		nC
Gate-Source Charge	$Q_{gs}$			1.5		
Gate-Drain Charge	$Q_{gd}$			2.5		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -10 V, R_L = 2.9 \Omega, I_D = -3.4 A,$ $V_{GEN} = -4.5 V, R_{GEN} = 6 \Omega$		7		ns
Rise Time	$t_r$			21		
Turn-Off Delay Time	$t_{d(off)}$			31		
Fall Time	$t_f$			22		
Input Capacitance	$C_{iss}$	$V_{DS} = -15 V, V_{GS} = 0 V, f = 1 MHz$		677		pF
Output Capacitance	$C_{oss}$			92		
Reverse Transfer Capacitance	$C_{rss}$			80		

## Notes

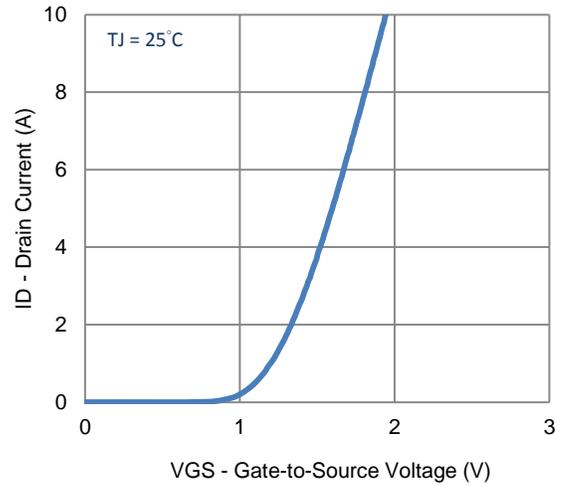
- Pulse test: PW  $\leq$  300us duty cycle  $\leq$  2%.
- Guaranteed by design, not subject to production testing.

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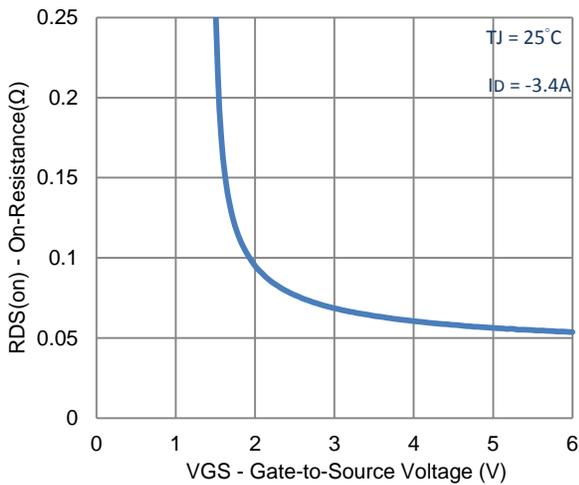
### Typical Electrical Characteristics



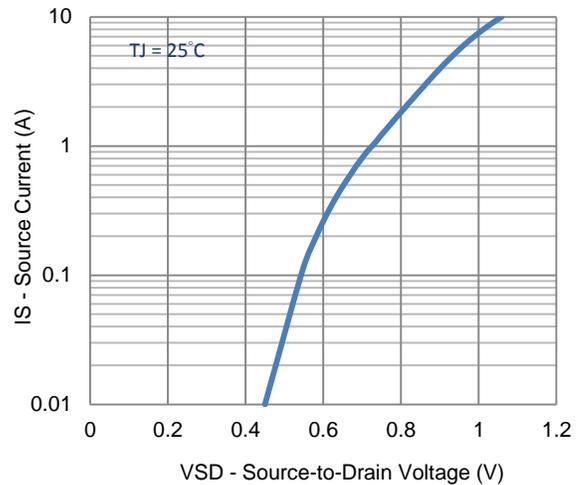
1. On-Resistance vs. Drain Current



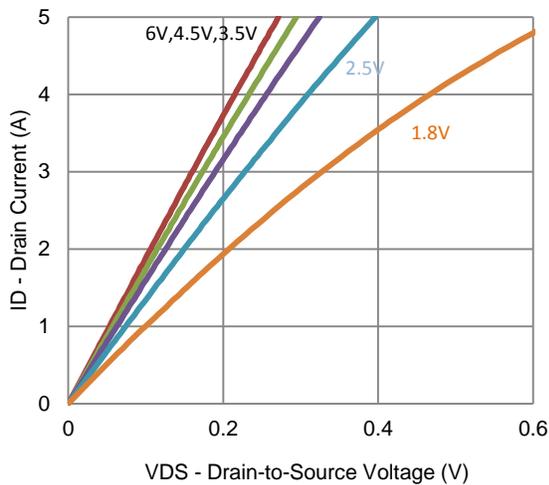
2. Transfer Characteristics



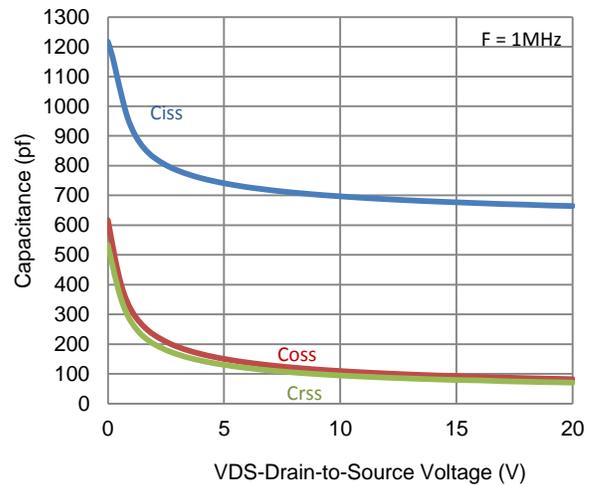
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

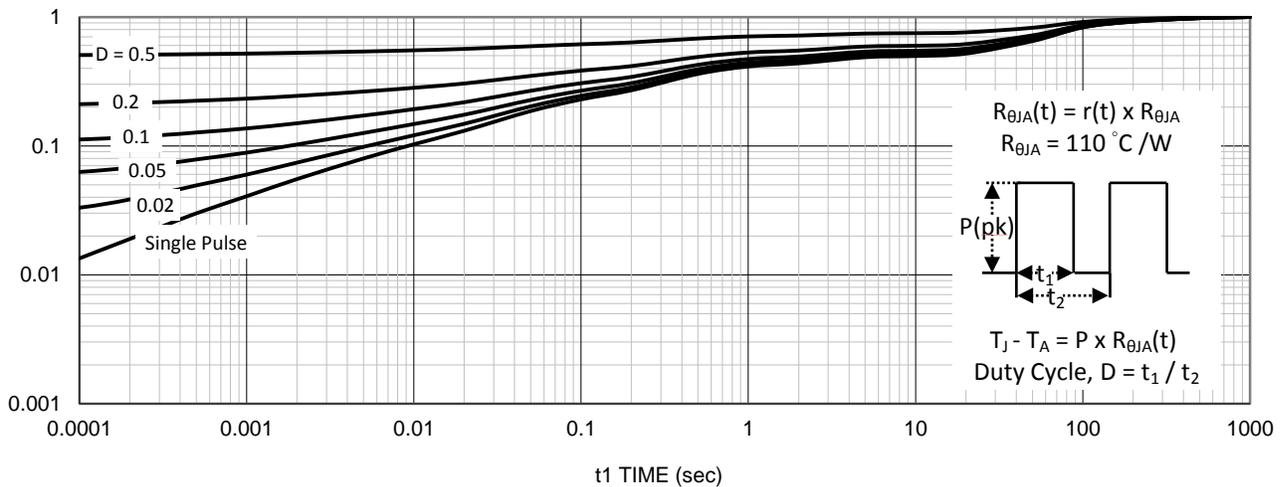
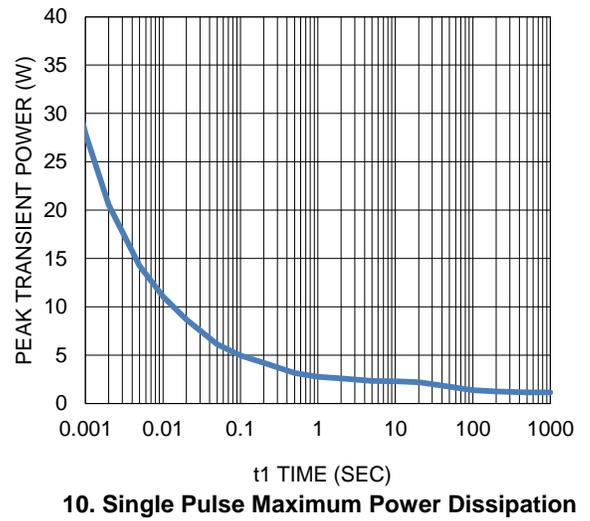
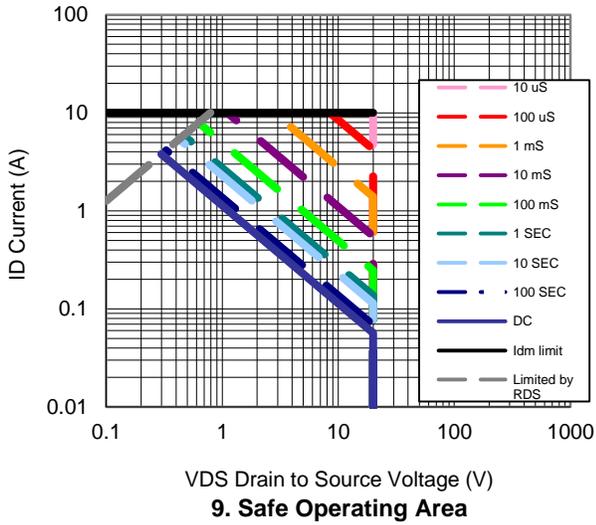
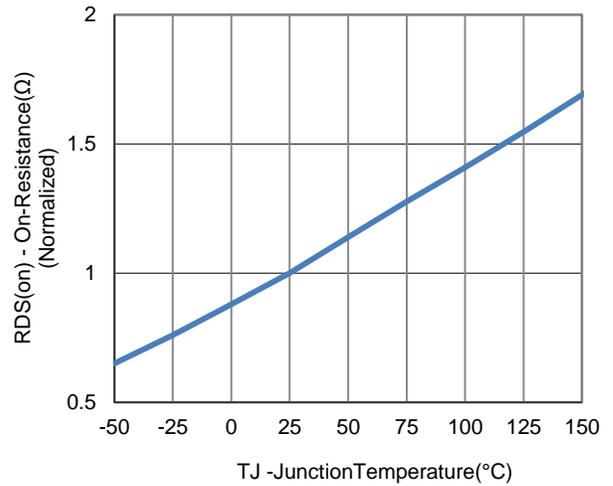
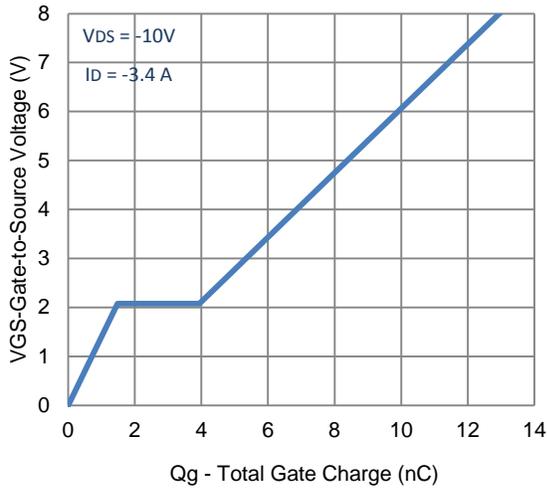


5. Output Characteristics

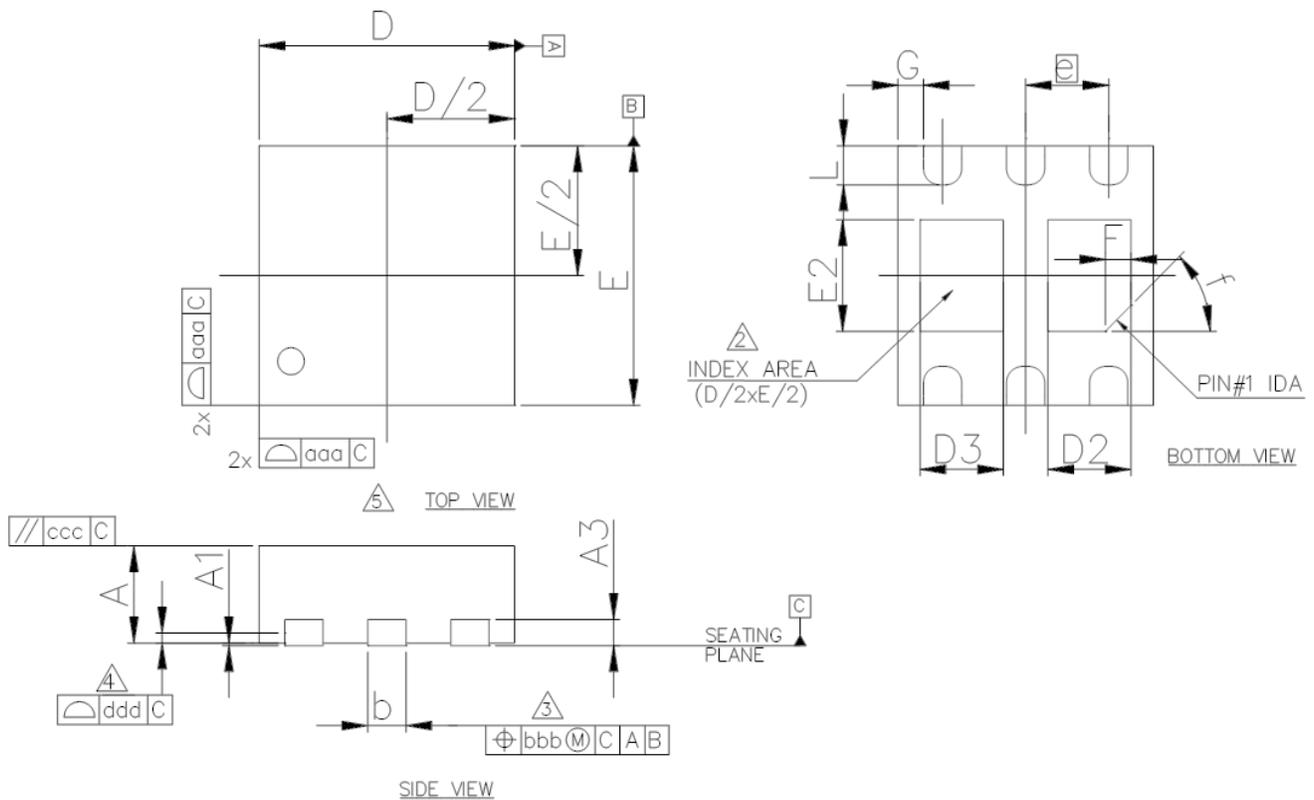


6. Capacitance

Typical Electrical Characteristics



Package Information



SYMBOL	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.70	0.75	0.80	0.028	0.030	0.032
A1	0.00	0.02	0.05	0.000	0.001	0.002
A3	---	0.20 ref	---	---	0.008 ref	---
b	0.25	0.30	0.35	0.010	0.012	0.014
D	2.00 BSC			0.079 BSC		
D2	0.60	0.65	0.70	0.024	0.026	0.028
D3	0.60	0.65	0.70	0.024	0.026	0.028
E	2.00 BSC			0.079 BSC		
E2	0.81	0.86	0.91	0.032	0.034	0.036
⊕	0.65 BSC			0.026 BSC		
L	0.25	0.30	0.35	0.010	0.012	0.014
F	0.20 REF			0.008 REF		
f	45°			45°		
G	0.15	0.20	0.25	0.006	0.008	0.010
aaa	0.15			0.006		
bbb	0.10			0.004		