P-Channel 20 V (D-S) MOSFET

PRODUCT SUMMARY			
V_{DS} (V)	$R_{DS(on)}$ (mΩ)(Typ.)	I_D (A)[a]	Q_g (Typ.)
- 20	97 at V_{GS} = - 4.5 V	- 2.5	3 nC
	125at V_{GS} = - 2.5 V		

FEATURES

- DT-Trench Power MOSFET
- Surface Mount Package

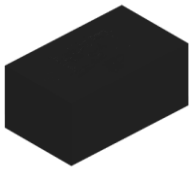
RoHS COMPLIANT

APPLICATIONS

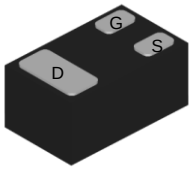
- Battery operated systems
- Direct logic-level interface: TTL/CMOS

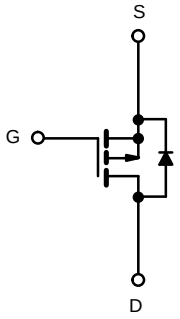
DFN1006-3L

Top View



Bottom View





P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_J = 25 °C, unless otherwise noted)				
PARAMETER		SYMBOL	LIMIT	UNIT
Drain-Source Voltage		V_{DS}	- 20	V
Gate-Source Voltage		V_{GS}	± 12	
Continuous Drain Current (T_J = 150 °C)	T_A = 25 °C	I_D	- 2.5	A
	T_A = 70 °C		- 1.8	
Pulsed Drain Current		I_{DM}	- 10	
Maximum Power Dissipation [a]	T_A = 25 °C	P_D	0.27	W
	T_A = 70 °C		0.17	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to +150	°C

THERMAL RESISTANCE RATINGS			
PARAMETER	SYMBOL	LIMIT	UNIT
Junction-to-Ambient (PCB Mount) [b]	R_{thJA}	420	°C/W

Notes:
a. T_C = 25 °C.
b. Surface mounted on 1" x 1" FR4 board.

SPECIFICATIONS (T_J = 25 °C, unless otherwise noted)						
PARAMETER	**SYMBOL**	**TEST CONDITIONS**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Static						
Drain-Source Breakdown Voltage	V_{DS}	V_{GS} = 0 V, I_D = - 250 µA	- 20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = - 250 µA	- 0.45	-	- 0.9	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 12 V	-	-	± 10	µA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = - 20 V, V_{GS} = 0 V	-	-	- 1	µA
On-State Drain Current [a]	$I_{D(on)}$	V_{DS} ≥ - 5 V, V_{GS} = - 4.5 V	- 0.25	-	-	A
Drain-Source On-State Resistance [a]	$R_{DS(on)}$	V_{GS} = - 4.5 V, I_D = - 1 A	-	97	127	mΩ
		V_{GS} = - 2.5 V, I_D = - 1 A	-	125	168	
Dynamic [b]						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = - 10 V, f = 1MHz	-	243	-	pF
Output Capacitance	C_{oss}		-	32	-	
Reverse Transfer Capacitance	C_{rss}		-	25	-	
Total Gate Charge [c]	Q_g	V_{DS} = - 10 V, V_{GS} = - 4.5 V, I_D = - 0.45 A	-	2.9	-	nC
Gate-Source Charge [c]	Q_{gs}		-	0.2	-	
Gate-Drain Charge [c]	Q_{gd}		-	0.8	-	
Switching Parameters						
Turn-On Delay Time	$t_{d(on)}$	V_{DS} = - 10 V, I_D = - 0.45 A, R_g = 6 Ω	-	5	-	ns
Rise Time	t_r		-	5	-	
Turn-Off DelayTime	$t_{d(off)}$		-	52	-	
Fall Time	t_f		-	33	-	
Drain-Source Body Diode Ratings and Characteristics [b] (T_C = 25 °C)						
Forward Voltage [a]	V_{SD}	I_S = - 1 A, V_{GS} = 0 V	-	-	- 1.1	V

Notes

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

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

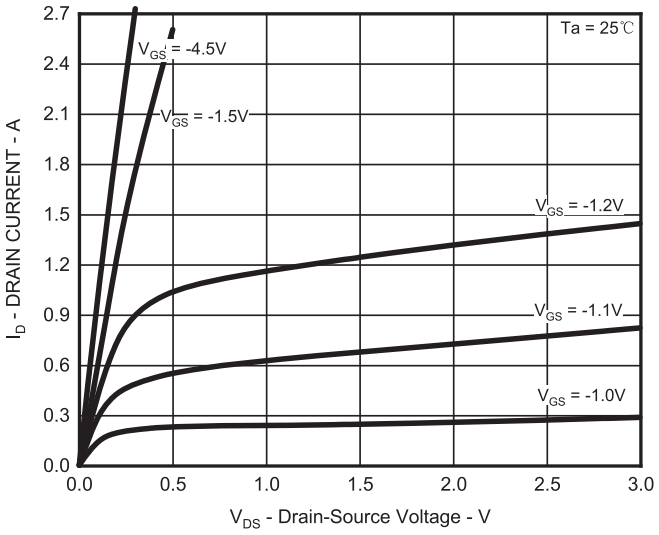


Fig.1 Output Characteristics

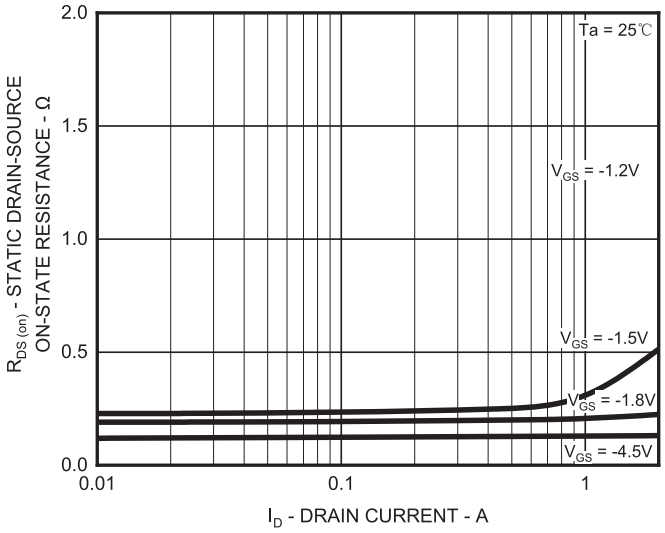


Fig.2 On-Resistance vs. Drain Current (I)

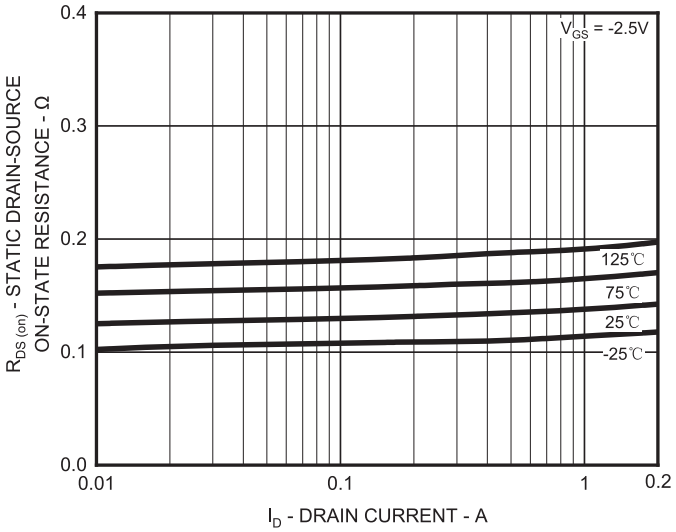


Fig.3 On-Resistance vs. Drain Current (II)

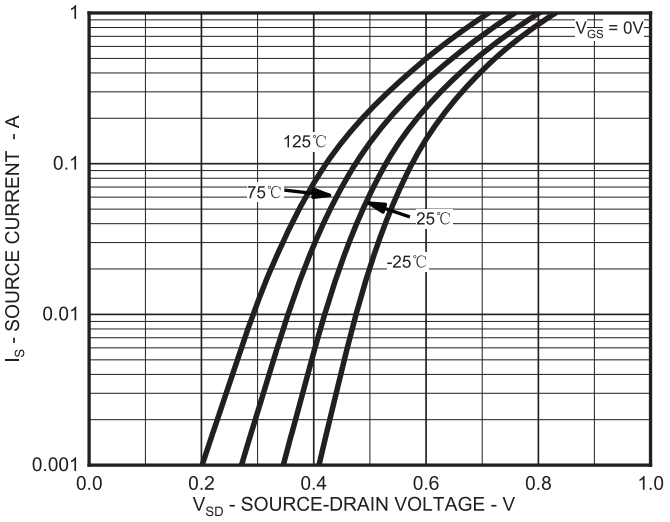


Fig.4 Diode Forward Voltage vs. Current

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

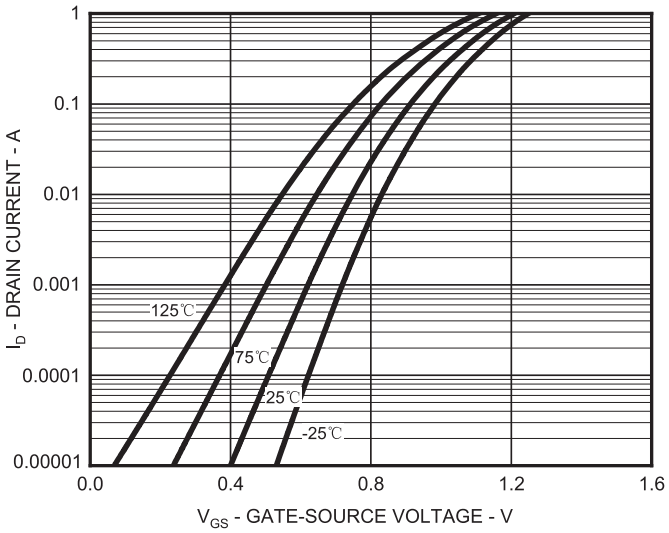


Fig.5 Typical Transfer Characteristic

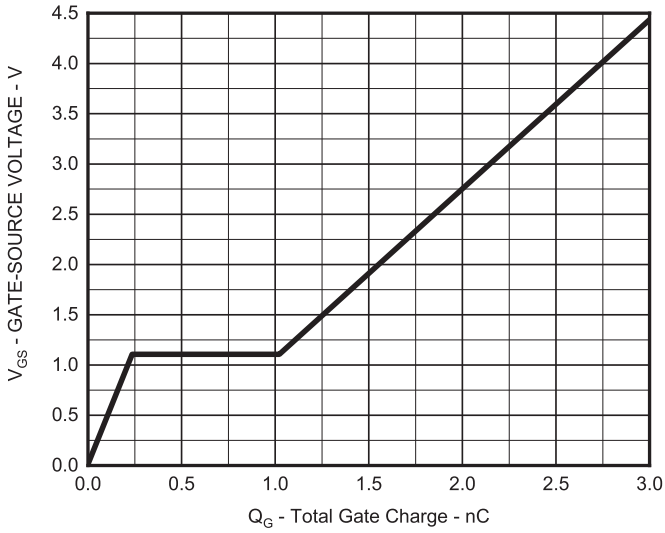


Fig.6 Gate Charge Characteristics

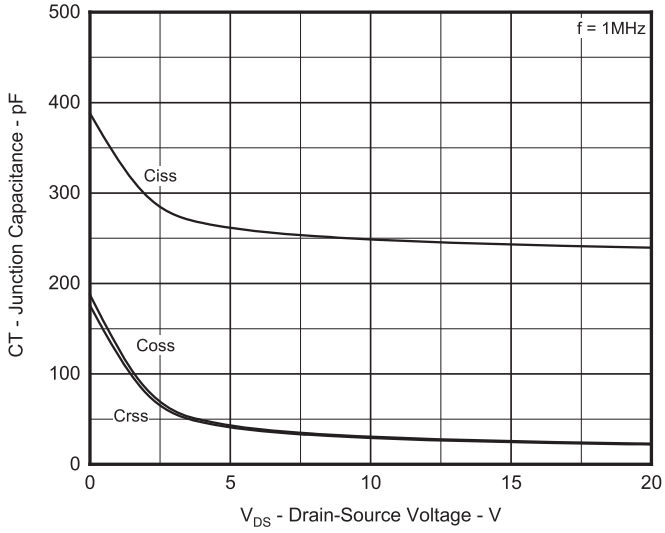


Fig.7 Typical Junction Capacitance

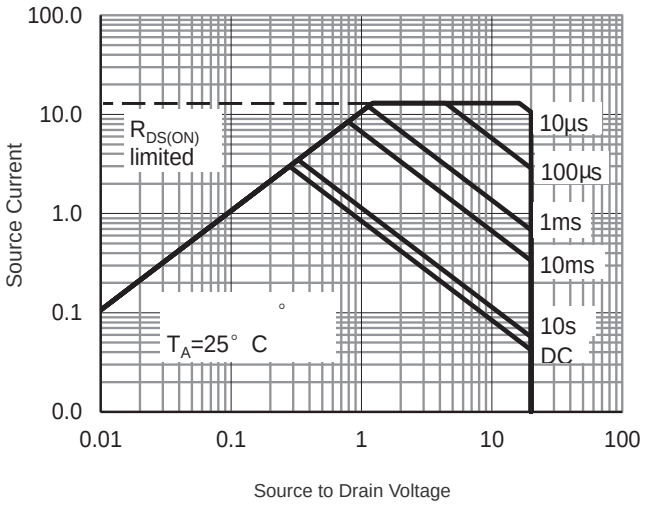
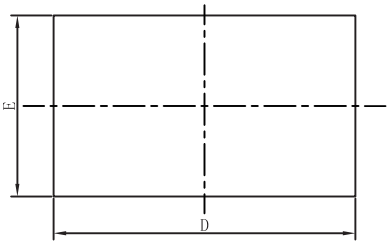
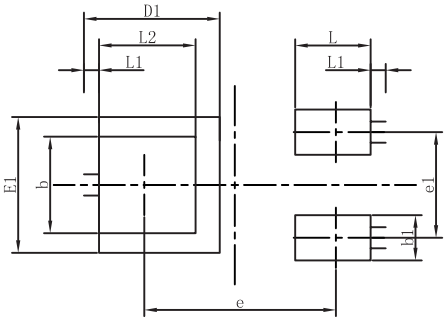


Fig.8 Safe Operating Area

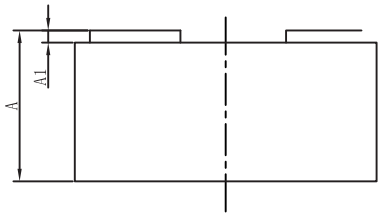
DFN1006-3L PACKAGEOUTLINE



TOP VIEW



BOTTOM VIEW



SIDE VIEW

COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	TYP	MAX
A	0.400	0.500	0.600
A1	0.000	0.050	0.150
D	0.850	1.000	1.150
E	0.450	0.600	0.750
D1	0.450REF		
E1	0.450REF		
b	0.200	0.350	0.600
b1	0.050	0.150	0.250
e	0.635REF		
e1	0.200	0.300	0.500
L	0.150	0.250	0.350
L1	0.050REF		
L2	0.150	0.300	0.400

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