20V P-Channel Enhancement MOSFET

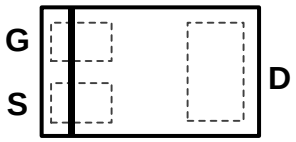
Features

- V_{DS}= -20V, I_D = -1.8A
  $R_{DS(on)}$ < 135mΩ @ V_{GS} = -4.5V
  $R_{DS(on)}$ < 180mΩ @ V_{GS} = -2.5V
- Trench LV MOSFET Technology

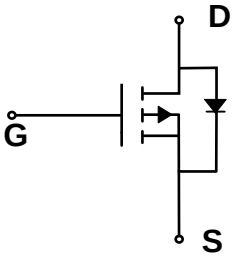
Mechanical Characteristics

- DFN1006-3L Package
- Marking: Marking Code
- RoHS Compliant

Schematic & PIN Configuration



DFN1006-3L(Top View)



Device symbol

Absolute Maximum Ratings (T_A = 25°C, unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±10	V
Continuous Drain Current	T_A=25°C	I_D	-1.8	A
Pulsed Drain Current [1]		I_{DM}	-7.2	A
Power Dissipation	T_A=25°C	P_D	0.7	W
Junction and Storage Temperature Range		T_J ,T_{STG}	-55 to +150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction to Ambient [2]	$R_{\theta JA}$	179	°C/W

Electrical Characteristics (T_J = 25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-20	-	-	V
Gate-Source Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±10V	-	-	±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -20V, V_{GS} = 0V	-	-	-1	μA
Gate_Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.4	-	-1.0	V
Drain-Source on-state Resistance (3)	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -1.7A	-	112	135	mΩ
		V_{GS} = -2.5V, I_D = -1.2A	-	149	180	
		V_{GS} = -1.8V, I_D = -1.0A	-	207	250	
Dynamic Characteristics (4)						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -10V, f = 1MHz	-	168	-	pF
Output Capacitance	C_{oss}		-	30	-	
Reverse Transfer Capacitance	C_{rss}		-	24	-	
Switching Characteristics (4)						
Total Gate Charge	Q_g	V_{GS} = -4.5V, V_{DS} = -10V, I_D= -1.7A	-	2.72	-	nC
Gate-Source Charge	Q_{gs}		-	0.49	-	
Gate-Drain Charge	Q_{gd}		-	0.57	-	
Turn-On Delay Time	$t_{d(on)}$	V_{GS} = -4.5V, V_{DD} = -10V, R_G = 3Ω, I_D= -1.7A	-	6.5	-	ns
Rise Time	t_r			4.8		
Turn-Off Delay Time	$t_{d(off)}$		-	18	-	
Fall Time	t_f		-	5	-	
Source-Drain Body Diode Characteristics						
Body Diode Voltage (3)	V_{SD}	I_S = -1A, V_{GS} = 0V	-	-	-1.2	V
Continuous Source Current	I_S		-	-	-1.8	A

Note1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C
Note2. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
Note3. Pulsed Test: Pulse width ≤ 300us , duty cycle ≤ 2%.
Note4. This value is guaranteed by design hence it is not included in the production test.

Typical Characteristics

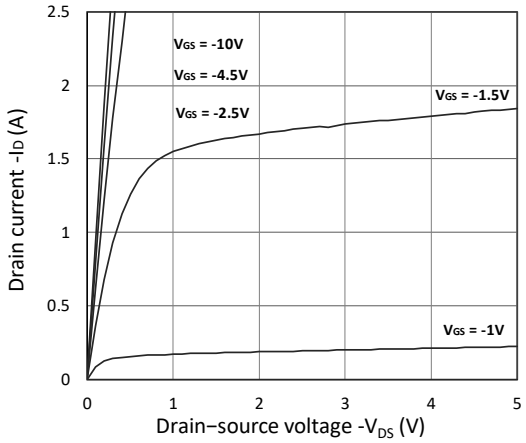


Figure 1. Output Characteristics

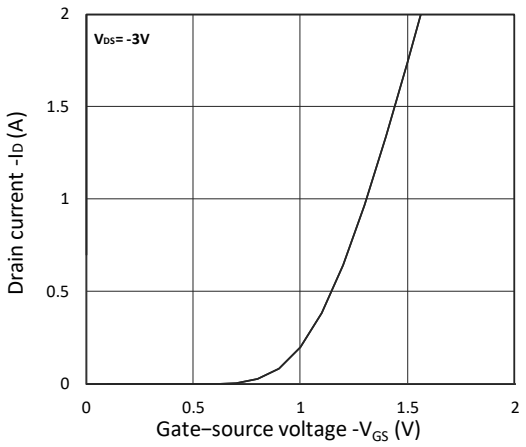


Figure 2. Transfer Characteristics

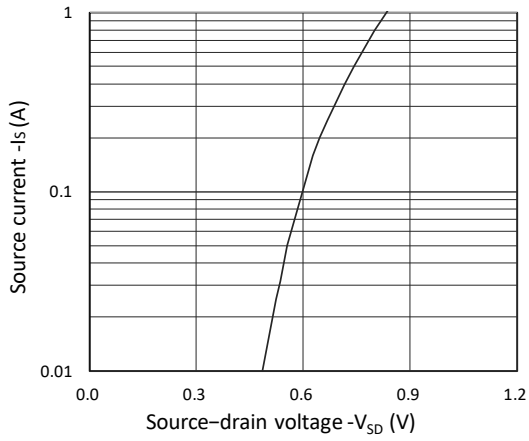


Figure 3. Forward Characteristics of Reverse

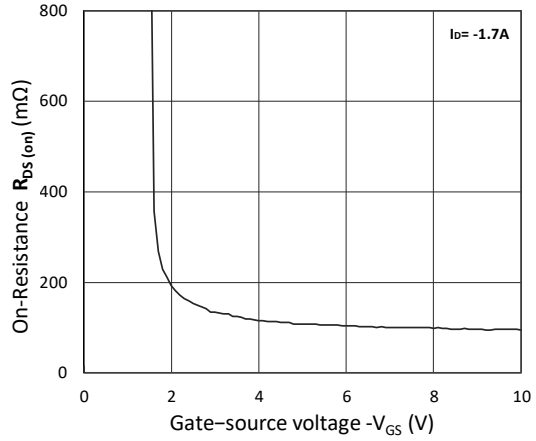


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

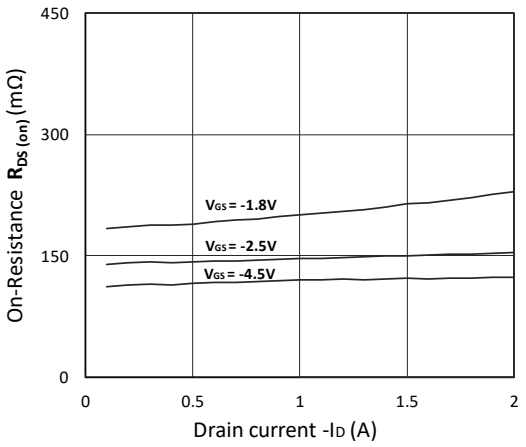


Figure 5. $R_{DS(ON)}$ vs. I_D

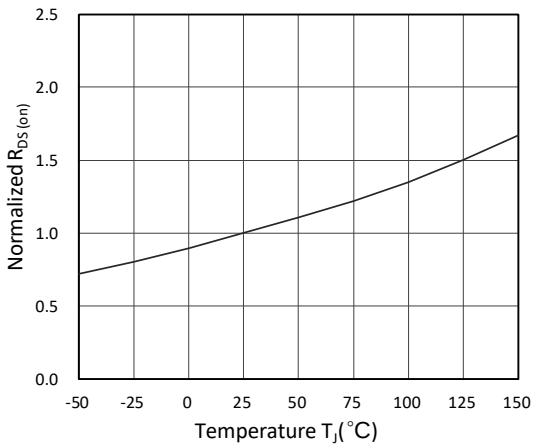


Figure 6. Normalized RDS(on) vs. Temperature

Typical Characteristics(Continued)

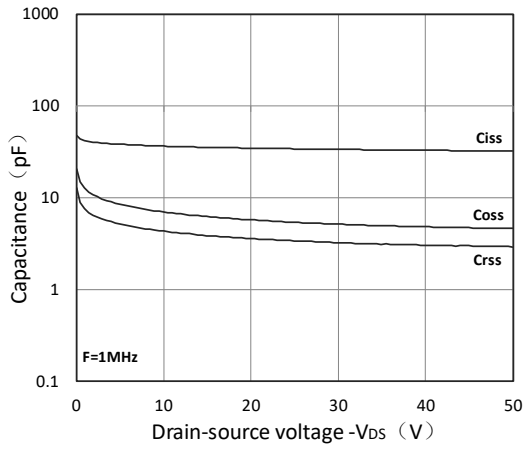


Figure 7. Capacitance Characteristics

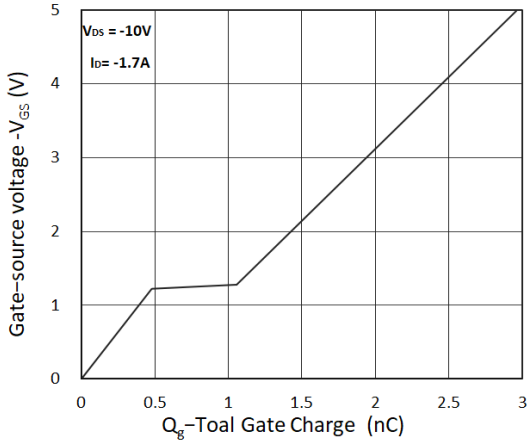
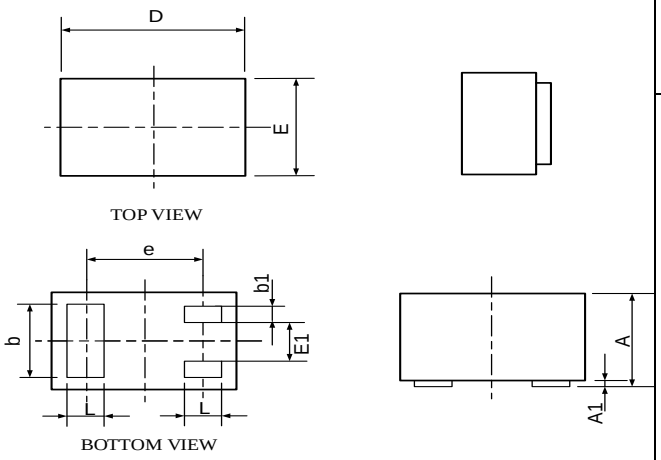


Figure 8. Gate Charge Characteristics

Package Dimension

DFN1006-3L

PACKAGE OUTLINE



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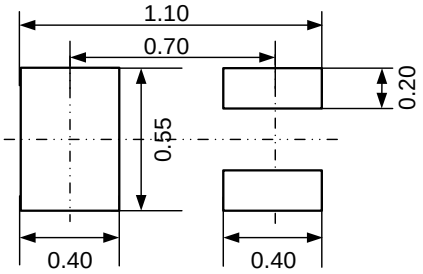
SYMBOL	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	0.45	0.55	0.018	0.022
A1	0.00	0.05	0.000	0.002
b	0.40	0.60	0.016	0.024
B1	0.10	0.20	0.004	0.008
D	0.95	1.05	0.037	0.041
e	0.65BSC		0.026BSC	
E	0.55	0.65	0.022	0.026
E1	0.19BSC		0.007BSC	
L	0.20	0.30	0.008	0.012

Land Pattern



Ordering Information

Part	Package	Marking	Packing Information
EM02P18F	DFN1006-3L	01K	10k/Reel

Revision History and Checking Table

Version	Date	Revision Item	Modifier	Function & Spec Checking	Package & Tape Checking
1.0	2022-08-17	Released Version	Chen Zu Xiong	Qi Shu Kun	Liu Jia Ying