Etek Microelectronics

EM02N08F

N-Channel Trench MOSFET

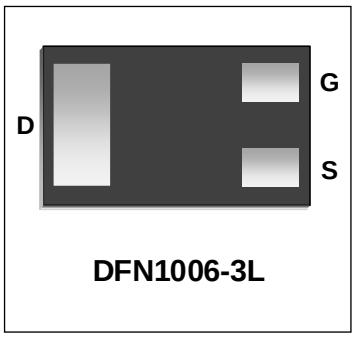
Features

- V_{DS}= 20 V, I_D = 0.75 A
  $R_{DS(on)}$ < 380mΩ @ V_{GS} = 4.5 V
  $R_{DS(on)}$ < 450mΩ @ V_{GS} = 2.5 V
  $R_{DS(on)}$ < 800mΩ @ V_{GS} = 1.8 V
- Very Fast Switching
- Trench MOSFET Technology
- Low Threshold Voltage
- Pb Free Device
- ESD Protected

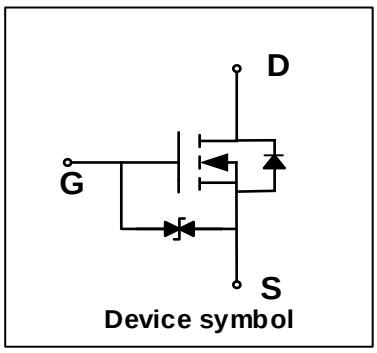
Mechanical Characteristics

- DFN1006-3L Package
- Marking : Making Code
- RoHS Compliant
- MSL1

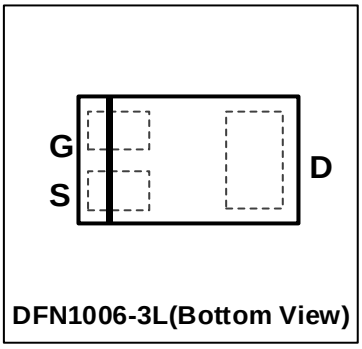
Schematic & PIN Configuration



DFN1006-3L



Device symbol



DFN1006-3L(Bottom View)

Absolute Maximum Rating

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous Drain Current [1]	I_D	0.75	A
Pulsed Drain Current(tp=10μs)	I_{DM}	1.8	A
Power Dissipation [1]	P_D	150	mW
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 to +150	℃

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction to Ambient [1]	$R_{\theta JA}$	833	℃/W

Electrical Characteristics (T_{amb}=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = 250μA	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =20V, V_{GS} = 0 V	-	-	1	μA
Gate-body Leakage Current	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±10V	-	-	±20	μA
Drain-Source On-state Resistance [2]	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 0.65A	-	0.19	0.38	Ω
		V_{GS} = 2.5V, I_D = 0.55A	-	0.26	0.45	
		V_{GS} = 1.8V, I_D = 0.45A	-	0.35	0.80	
Gate threshold voltage [2]	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.35	0.75	1.1	V
Forward transconductance	g_{fs}	V_{DS} =10V, I_D = 0.15A	150	-	-	mS
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 16V, f = 1MHz	-	79	120	pF
Output Capacitance	C_{oss}		-	13	20	
Reverse Transfer Capacitance	C_{rss}		-	9	15	
Switching Characteristics						
Turn-On Delay Time[3,4]	$t_{d(on)}$	V_{DS} =10V, V_{GS} =4.5V,I_D =0.5A, R_{GEN}=10Ω	-	6.7	-	ns
Turn-On Rise Time[3,4]	t_r			4.8	-	
Turn-Off Delay Time[3,4]	$t_{d(off)}$		-	17.3	-	
Turn- Off Fall Time[3,4]	t_f		-	7.4	-	
Source-Drain Diode Characteristics						
Body Diode Voltage	V_{SD}	I_S=0.15A, V_{GS} = 0V	-	-	1.2	V

Notes:

1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test: Pulse width≤300μs, duty cycle≤2%.
3. Switching characteristics are independent of operating junction temperatures.
4. Guaranteed by design, not subject to producting.

Typical Characteristics

Figure 1. Output Characteristics

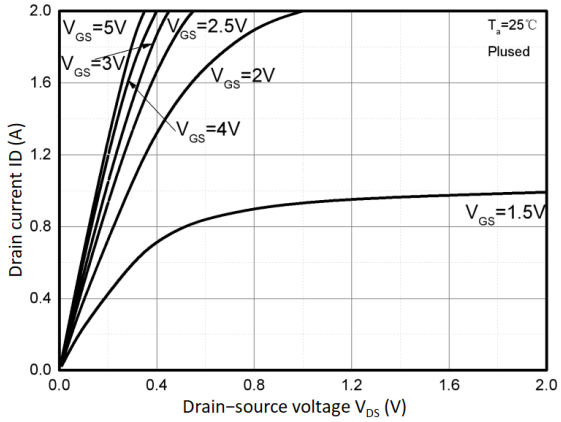


Figure 2. Transfer Characteristics

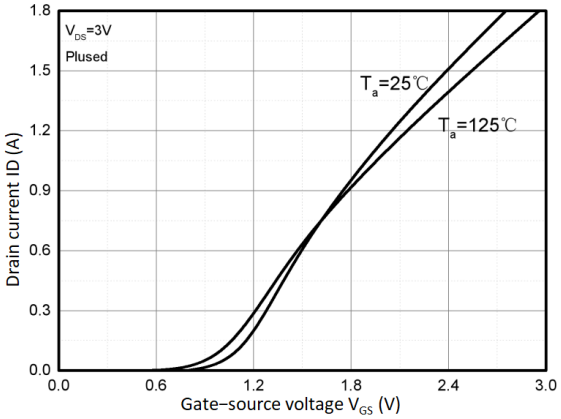


Figure 3. $R_{DS(ON)}$ vs. I_D

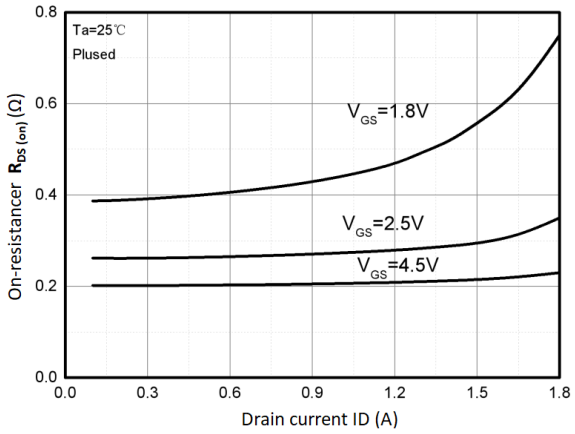


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

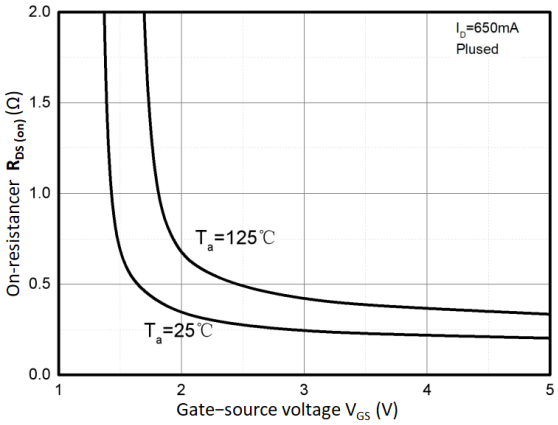


Figure 5. I_S vs. V_{SD}

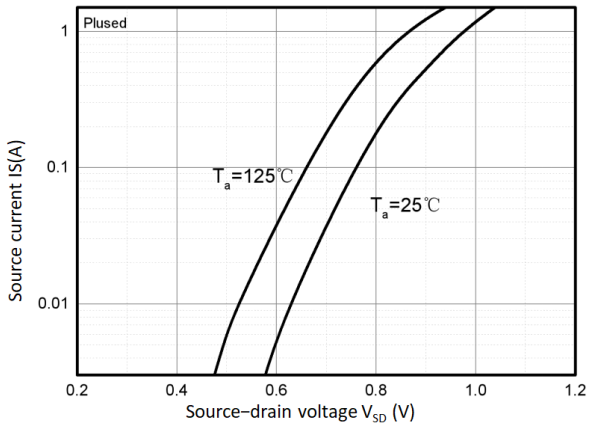
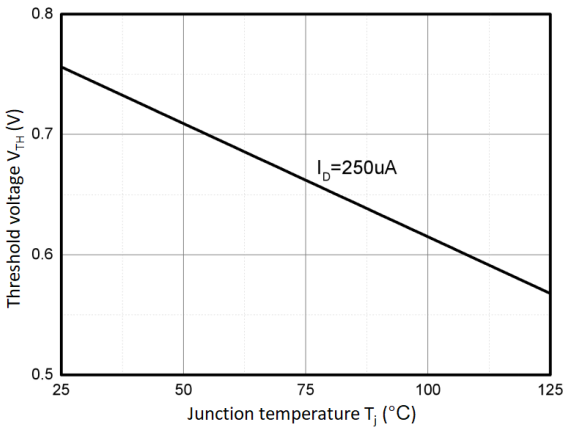
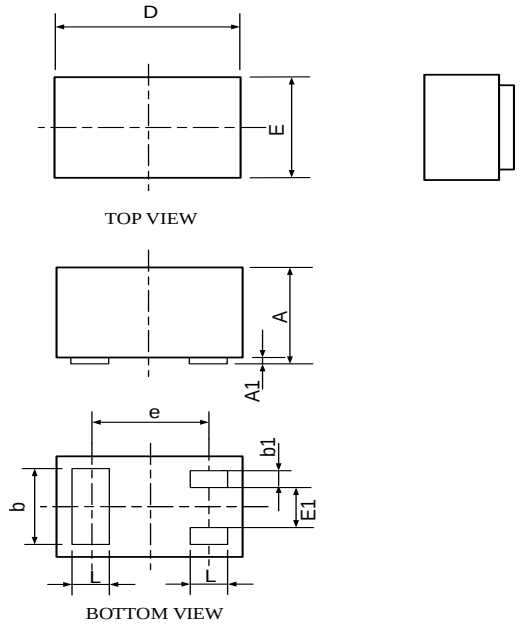


Figure 6. $V_{GS(th)}$ vs.T_J



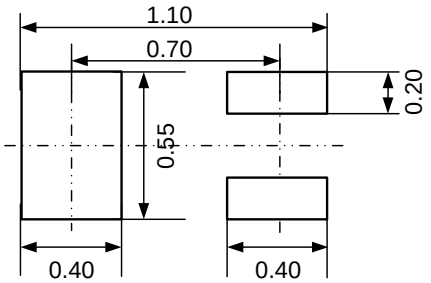
Outline Drawing – DFN1006-3L

PACKAGE OUTLINE



SYMBOL	MILIMETER		
	MIN.	TYP.	MAX.
A	0.45	0.50	0.55
A1	0	-	0.05
b	0.40	0.50	0.60
b1	0.1	0.15	0.2
D	0.95	1	1.05
e	0.65BSC		
E	0.55	0.6	0.65
E1	0.19BSC		
L	0.20	0.25	0.3

Land Pattern



Marking Codes

Part Number	EM02N08F
Marking Code	

Package Information

Qty：10k/Reel

Revision History

No.	Version	Date	Revision Item	Request	Function and characteristic checking	Package dimension checking	Typos checking
1	1.0	2018-11-15	Released Version	Qi Shu Kun	Qi Shu Kun	Liu Jia Ying	Liu Jia Ying
2	1.1	2020-03-17	Add MSL level	Qi Shu Kun	Qi Shu Kun	Liu Jia Ying	Liu Jia Ying