MFQ1916-EVL

20V N-CHANNEL ENHANCEMENT MODE MOSFET

VENKEL LTD.

PART NUMBER	PACKAGE	VOLTAGE	CURRENT	CIRCUIT CONFIGURATION
MFQ1916-EVL 7" Embossed T&R (10,000pcs)	DFN 1006-3L	20V	950mA	N-CHANNEL

FEATURES:

- Advanced Trench Process Technology
- ESD Protected
- Specially Designed for Switch Load, PWM Application, etc
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

MECHANICAL DATA:

- Case: DFN1006-3L Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.00002 ounces, 0.0007 grams

MAXIMUM RATINGS

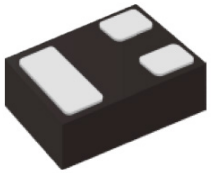
MAXIMUM RATINGS AND THERMAL CHARACTERISTICS (T_A=25˚C UNLESS OTHERWISE NOTED)

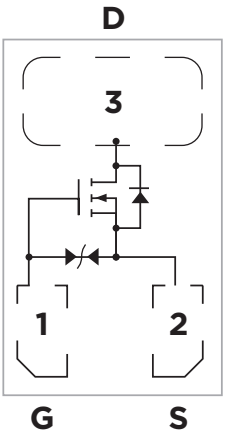
PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±8	
Continuous Drain Current (note 4)		I_D	950	mA
Pulse Drained Current (note 1)		I_{DM}	1900	
Power Dissipation	T_a=25˚C	P_D	500	mW
	Derate above 25˚C		4	mW /˚C
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to +150	˚C

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	VALUE	UNITS
Typical Thermal resistance - Junction to Ambient (Note 3,4)	RθJA	250	˚C/W

DFN1006-3L





ENVIRONMENTAL INFORMATION

RoHS Status	10 of 10 Compliant
REACH Status	Compliant
Halogen Status	Halogen Free
Conflict Mineral Status	Conflict Mineral Free
Moisture Sensitivity Level (MSL)	1

ELECTRICAL CHARACTERISTICS

(T_A=25°C UNLESS OTHERWISE NOTED)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYPE	MAX	UNITS
STATIC						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.3	0.5	1	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=4.5V, I_D=500mA	-	220	300	mΩ
		V_{GS}=2.5V, I_D=400mA	-	250	400	mΩ
		V_{GS}=1.8V, I_D=200mA	-	300	550	mΩ
		V_{GS}=1.5V, I_D=100mA	-	340	800	mΩ
		V_{GS}=1.2V, I_D=10mA	-	480	1500	mΩ
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V	-	-	1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V	-	-	±10	μA
DYNAMIC (Note 5)						
Total Gate Charge	Qg	V_{DS}=10V, I_D=500mA, V_{GS}=4.5V (Note 2)	-	1.1	-	nC
Gate-Source Charge	Qgs		-	0.16	-	nC
Gate-Drain Charge	Qgd		-	0.12	-	nC
Input Capacitance	Ciss	V_{DS}=10V, V_{GS}=0V f=1MHZ	-	46	-	pF
Output Capacitance	Coss		-	15	-	pF
Reverse Transfer Capacitance	Crss		-	3	-	pF
Turn-On Delay Time	td(on)	V_{DD}=10V, I_D=500mA, V_{GS}=4.5V R_G=6Ω (Note 2)	-	5.3	-	ns
Turn-On Rise Time	t_r		-	22	-	ns
Turn-Off Delay Time	td(off)		-	43	-	ns
Turn-Off Fall Time	t_f		-	31	-	ns
DRAIN-SOURCE DIODE						
Maximum Continuous Drain-Source Diode Forward Current	I_S	-	-	-	500	mA
Diode Forward Voltage	V_{SD}	I_S=0.5A, V_{GS}=0V	-	0.70	1.0	V

NOTES:

1. Pulse width≤300us, Duty cycle≤2%.
2. Essentially independent of operating temperature typical characteristics.
3. RθJA is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. Mounted on a 1 inch² with 2oz. square pad of copper.
4. The maximum current rating is package limited.
5. Guaranteed by design, not subject to production testing.

GRAPHS

Fig.1 On-Region Characteristics

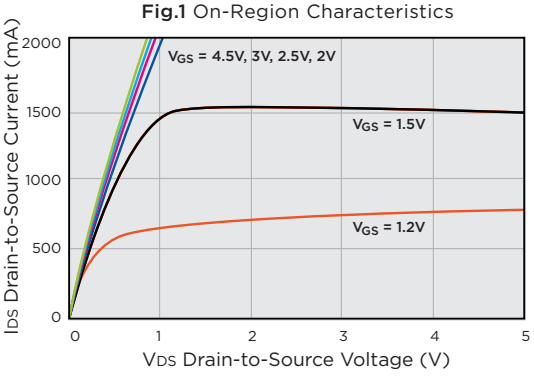


Fig.2 Transfer Characteristics

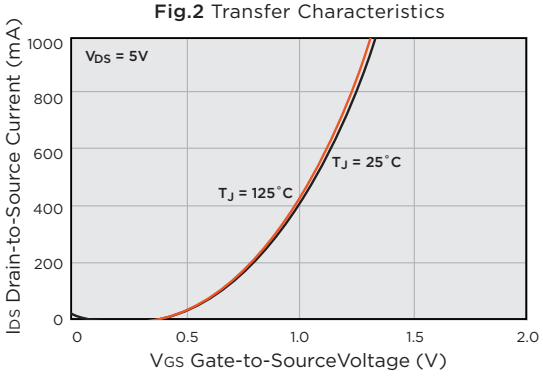


Fig.3 On-Resistance vs. Drain Current

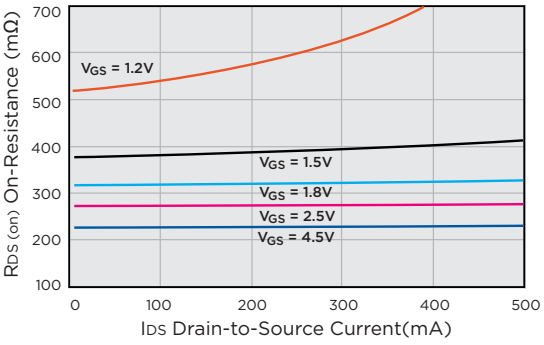


Fig.4 On-Resistance vs. Junction Temperature

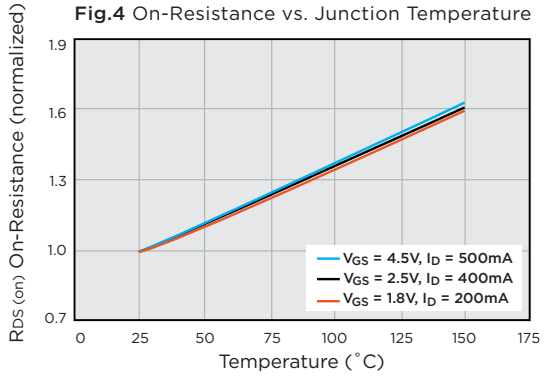


Fig.5 On-Resistance Variation with VGS

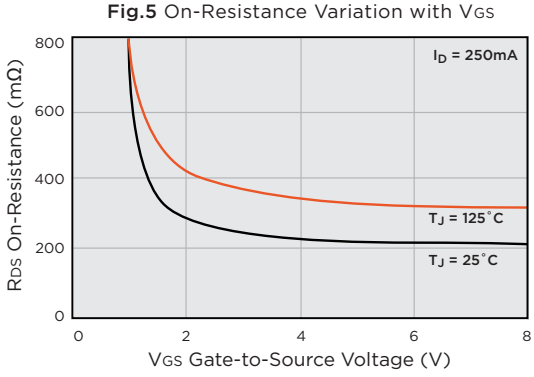


Fig.6 Body Diode Characteristics

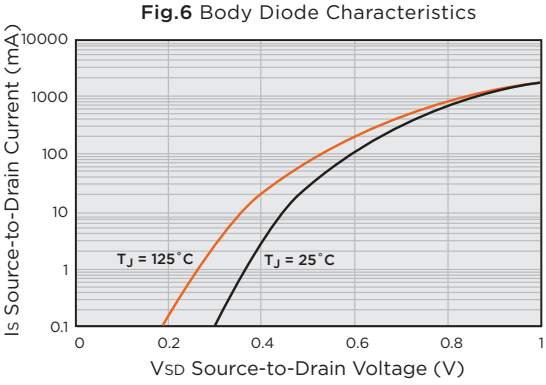


Fig.7 Gate-Charge Characteristics

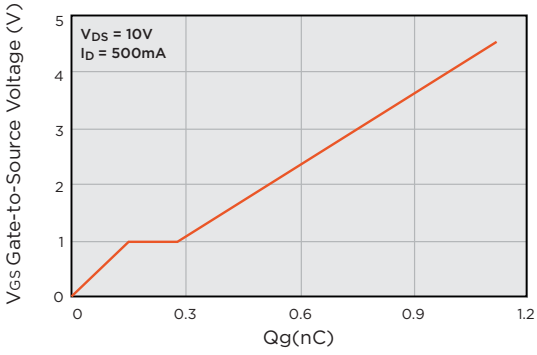
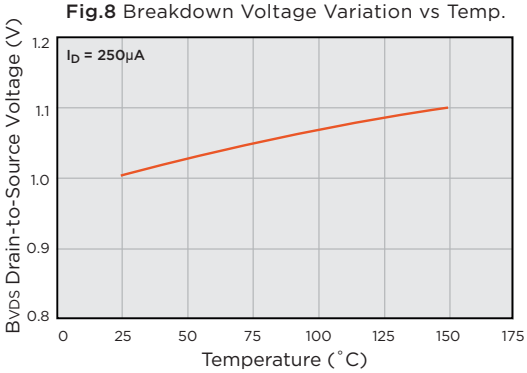


Fig.8 Breakdown Voltage Variation vs Temp.



GRAPHS

Fig.9 Threshold Voltage Variation with Temp.

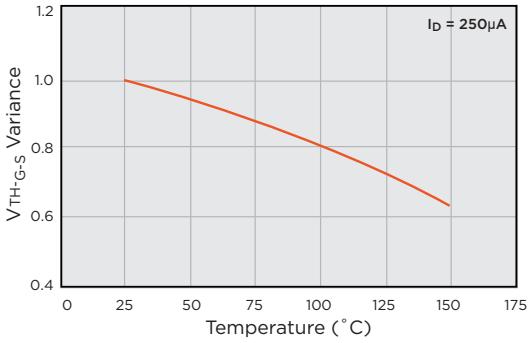
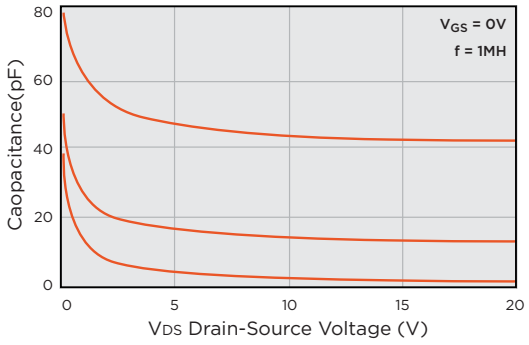
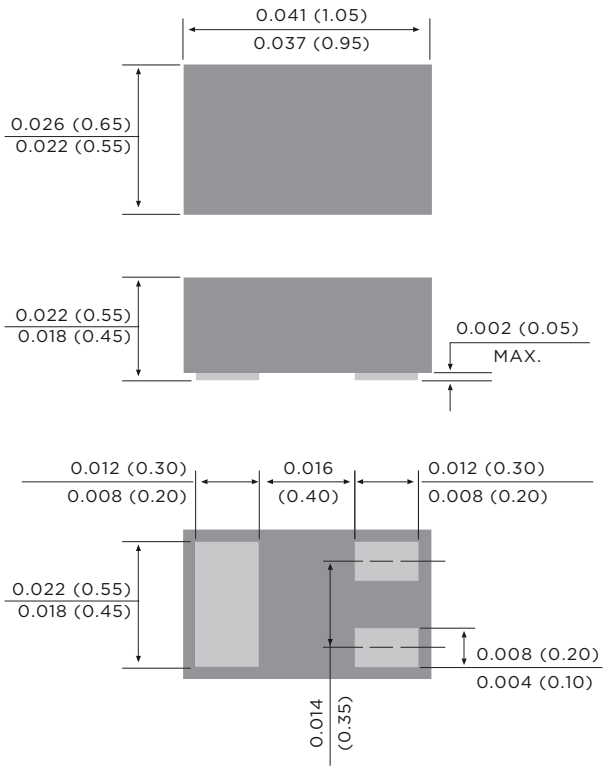


Fig.10 Capacitance vs Drain-Source Voltage



DIMENSIONS

Units: inch (mm)



MOUNTING PAD LAYOUT

Units: inch (mm)