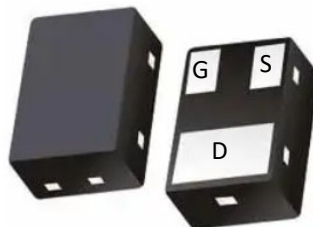


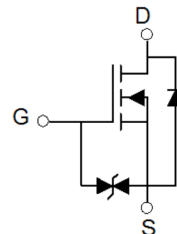
Features

- * $V_{DS} = 20V$, $I_D = 0.98A$
- * $R_{DS(ON)} = \text{Typ } 190m\Omega @ V_{GS} = 4.5V$
- * $R_{DS(ON)} = \text{Typ } 255m\Omega @ V_{GS} = 2.5V$
- * ESD protected
- * DFN1006-3L package

Package and Circuit diagram



DFN1006-3L



Circuit diagram

Marking diagram



Ordering Information

Part Number	Packaging	Reel Size
FPMZ290UNE2YL	10000/Tape & Reel	7 inch

Absolute maximum ratings ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current ($T_A = 25^\circ\text{C}$)	0.98	A
I_D	Continuous Drain Current ($T_A = 100^\circ\text{C}$)	0.6	A
I_{DM}	Pulsed Drain Current ^{note1}	3	A
P_D	Power Dissipation ($T_A = 25^\circ\text{C}$)	0.2	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	625	$^\circ\text{C}/\text{W}$
T_J	Maximum Junction Temperature	$-40 \sim +150$	$^\circ\text{C}$
T_{STG}	Storage Temperature	$-55 \sim +150$	$^\circ\text{C}$

Electrical characteristics (T_A=25°C unless otherwise specified)

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
Off characteristics						
V _{(BR)DS}	Drain-source breakdown voltage	V _{GS} = 0V, I _D = 250μA	20			V
I _{DS}	Zero gate voltage drain current	V _{DS} = 16V, V _{GS} = 0V			1	μA
I _{GS}	Gate to body leakage current	V _{DS} = 0V, V _{GS} = ±12V			± 10	μA
On characteristics						
V _{GS(th)}	Gate threshold voltage	V _{DS} = V _{GS} , I _D = 250μA	0.5	0.75	1	V
R _{DS(on)}	Static drain-source on resistance ^{Note2}	V _{GS} = 4.5V, I _D = 0.55A		190	230	mΩ
		V _{GS} = 2.5V, I _D = 0.45A		255	330	mΩ
		V _{GS} = 1.8V, I _D = 0.35A		365	550	mΩ
Dynamic characteristics						
C _{iss}	Input capacitance	V _{DS} = 10V V _{GS} = 0V f = 1MHz		41		pF
C _{oss}	Output capacitance			17		pF
C _{rss}	Reverse transfer capacitance			10		pF
Q _g	Total gate charge	V _{DS} = 10V I _D = 1A V _{GS} = 4.5V		1		nC
Q _{gs}	Gate-source charge			0.3		nC
Q _{gd}	Gate-drain charge			0.1		nC
Switching characteristics						
t _{d(on)}	Turn-on delay time	V _{DS} = 10V I _D = 1A R _{GEN} = 6Ω V _{GS} = 4.5V		1.2		ns
t _r	Turn-on rise time			24.7		ns
t _{d(off)}	Turn-off delay time			13.6		ns
t _f	Turn-off fall time			14.8		ns
Drain-source diode characteristics and maximum ratings						
V _{SD}	Drain to source diode forward voltage	V _{GS} = 0V, I _S = 1A		0.85	1.2	V
I _S	Maximum continuous drain to source diode forward current				0.98	A
t _{rr}	Body diode reverse recovery time	I _F = 1A, di/dt = 100A/μs		9.2		ns
Q _{rr}	Body diode reverse recovery charge			0.8		nC

Notes: 1. Repetitive rating: pulse width limited by maximum junction temperature

2. Pulse test: pulse width ≤ 300μs, duty cycle ≤ 0.5%

Typical performance characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)

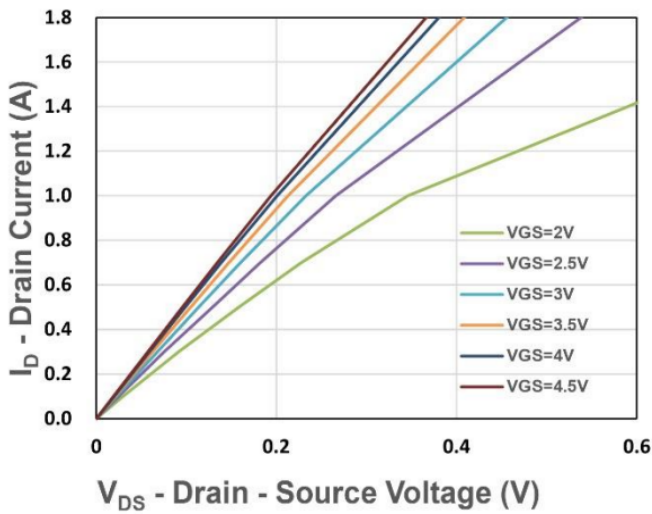


Figure 1. Output Characteristics

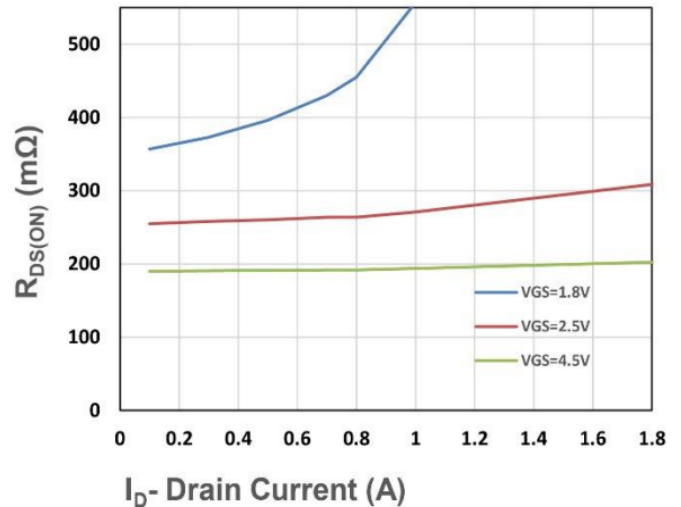


Figure 2. On-Resistance vs. I_D

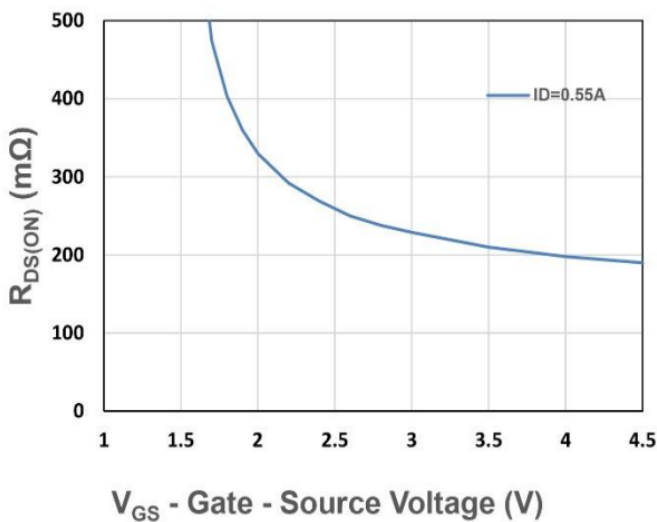


Figure 3. On-Resistance vs. V_{GS}

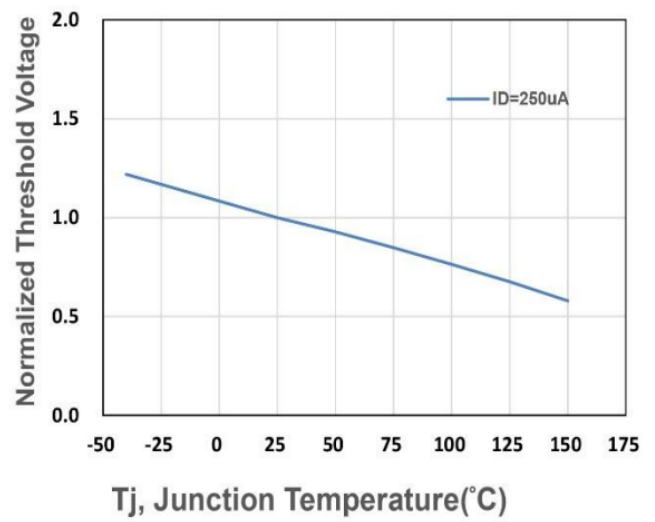


Figure 4. Gate Threshold Voltage

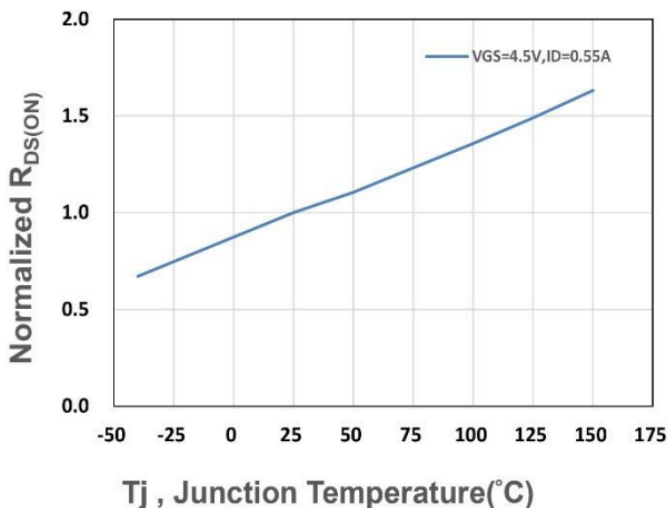


Figure 5. Drain-Source On Resistance

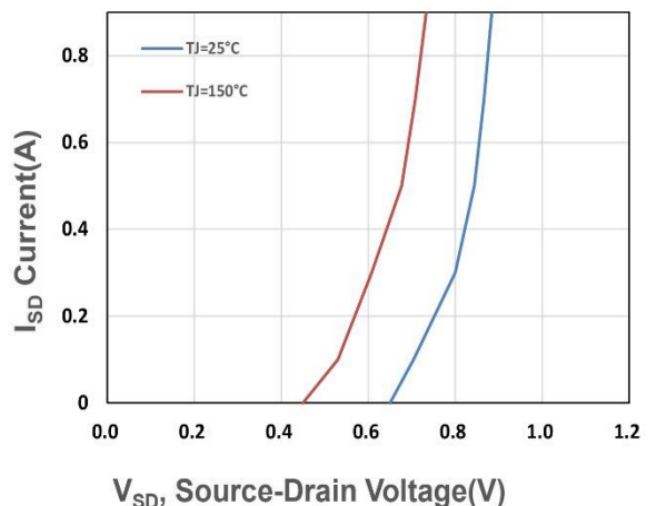
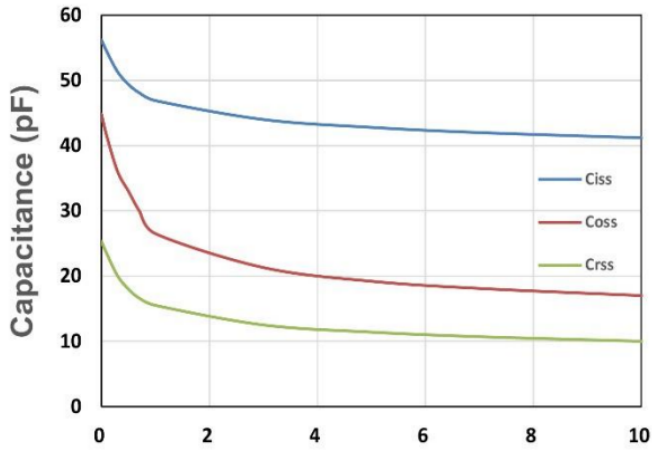
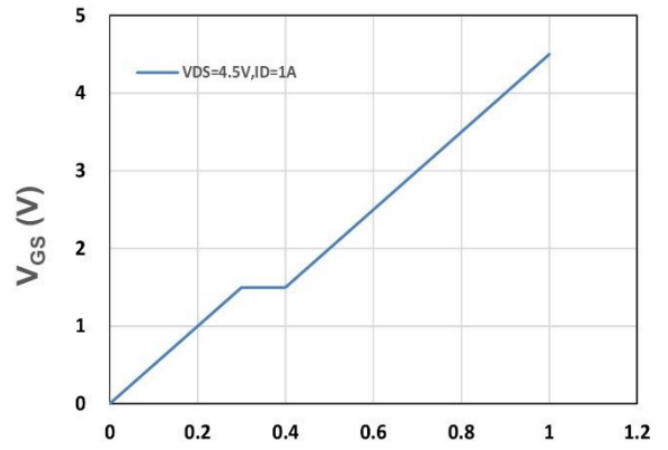


Figure 6. Source-Drain Diode Forward

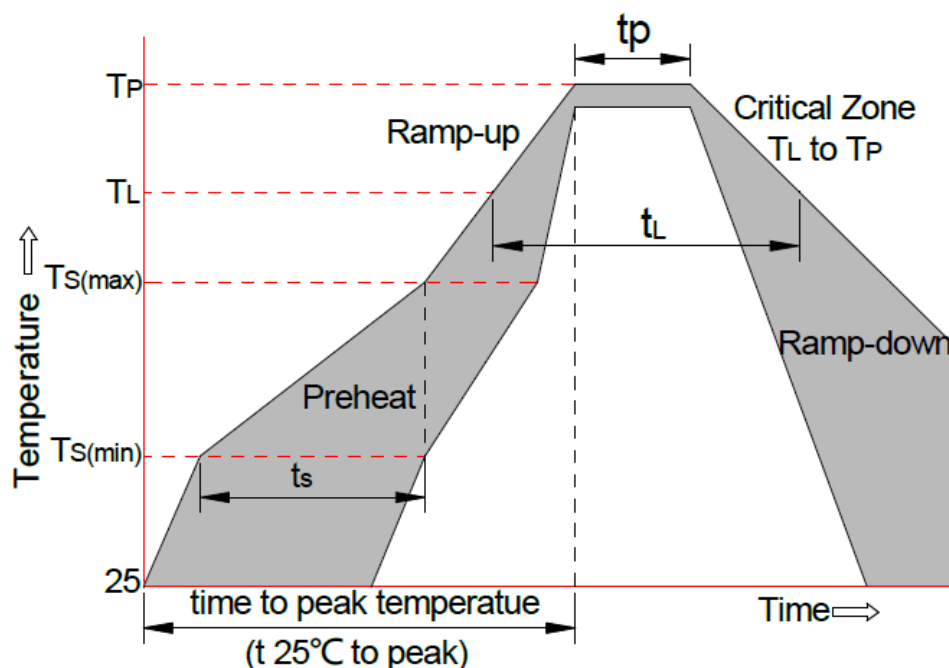


V_{DS} - Drain - Source Voltage (V)
Figure 7. Capacitance



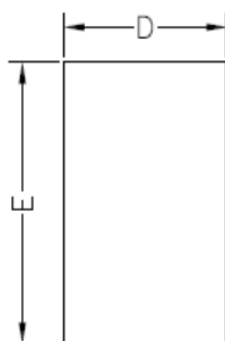
Q_g , Total Gate Charge (nC)
Figure 8. Gate Charge Characteristics

Soldering Parameters



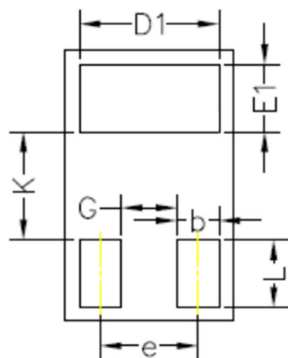
Reflow Conditions		Pb-Free Assembly
Pre-heat	-Temperature Min ($T_s (min)$)	+150°C
	-Temperature Max ($T_s (max)$)	+200°C
	-Time (Min to Max) (t_s)	60-180 secs
Average ramp up rate(Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s (max)}$ to T_L -Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature (T_L) (Liquid us)	+217°C
	-Temperature (t_L)	60-150 secs
Peak Temp (T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6 °C/secs. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C

DFN1006-3L Package Outline Drawing

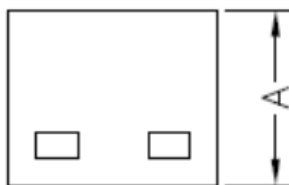


TOP VIEW

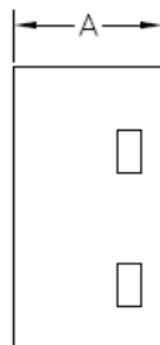
SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	Min	Typ	Max	Min	Typ	Max
A	0.50	0.55	0.60	0.0197	--	0.0236
D	0.55	0.60	0.65	0.0217	0.0236	0.0256
E	0.95	1.00	1.05	0.0374	0.0394	0.0413
D1	0.45	0.50	0.55	0.0177	0.0197	0.0217
E1	0.20	0.25	0.30	0.0079	0.0098	0.0118
e	0.35 BSC					
L	0.20	0.25	0.30	0.0079	0.0098	0.0118
b	0.10	0.15	0.20	0.0039	0.0059	0.0079
G	0.15	0.20	0.25	0.0059	0.0079	0.0098
K	0.35	0.40	0.45	0.0138	0.0157	0.0177



BOTTOM VIEW

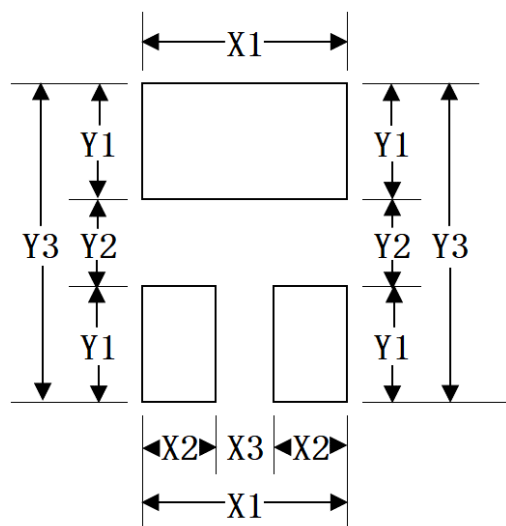


SIDE VIEW



SIDE VIEW

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X1	0.70	0.028
X2	0.25	0.010
X3	0.20	0.008
Y1	0.40	0.016
Y2	0.30	0.012
Y3	1.10	0.043

Note:

The land pattern is for reference purposes only.