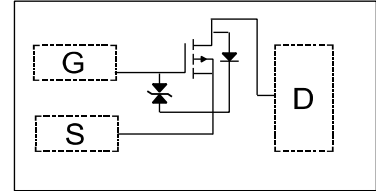


Description

The MOSFET provide the best combination of fast switching, low on-resistance and cost-effectiveness.

MOSFET Product Summary		
$V_{DS}(V)$	$R_{DS(on)}(\Omega)$	$I_D(mA)$
-20	0.45@ $V_{GS}=-4.5V$	-800
	0.62@ $V_{GS}=-2.5V$	
	0.86@ $V_{GS}=-1.8V$	



Top View

Absolute maximum rating@25°C

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current	Continuous	I_D	-800
	Pulsed	I_{DP}	-1200
Maximum Power Dissipation (Note 1)(Note 4)	$T_A=25^\circ C$	P_D	270
	$T_A=70^\circ C$		170
Maximum Power Dissipation (Note 2)(Note 4)	$T_A=25^\circ C$	P_D	240
	$T_A=70^\circ C$		150
Pulsed Drain Current(Note 3)	I_{DM}	-1.2	A
Operating Junction Temperature	T_J	150	$^\circ C$
Lead Temperature	T_L	260	$^\circ C$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ C$

Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Units	
Junction-to-Ambient Thermal Resistance (Note 1)	$R_{\theta JA}$	$t \leq 10$ s	-	350	400	$^\circ C/W$
		Steady State	-	395	460	$^\circ C/W$
Junction-to-Ambient Thermal Resistance (Note 2)	$R_{\theta JA}$	$t \leq 10$ s	-	390	445	$^\circ C/W$
		Steady State	-	450	515	$^\circ C/W$
Junction-to-Case Thermal Resistance	$R_{\theta JA}$	-	245	290	$^\circ C/W$	

Electrical characteristics per line@25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	$I_D = -250\mu A, V_{GS} = 0V$	-20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -16V, V_{GS} = 0V$	-	-	-1	μA
Gate-to-source Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 8V$	-	-	± 10	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS} = V_{DS}, I_D = -250\mu A$	-0.45	-0.55	-0.95	V
Drain-to-source On-resistance (Note 5)	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -700mA$	-	450	700	$m\Omega$
		$V_{GS} = -2.5V, I_D = -300mA$	-	620	850	$m\Omega$
		$V_{GS} = -1.8V, I_D = -100mA$	-	1000	1500	$m\Omega$
Forward Transconductance	g_{FS}	$V_{DS} = -5V, I_D = -450mA$	-	1.25	-	s
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	$V_{GS} = 0V, V_{DS} = -10V,$ $f = 1MHz$	-	72	-	pF
Output Capacitance	C_{OSS}		-	9.5	-	pF
Reverse Transfer Capacitance	C_{RSS}		-	9.8	-	pF
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = -4.5V, V_{DS} = -10V,$ $I_D = -450mA$	-	0.9	-	nC
Threshold Gate Charge	$Q_{G(TH)}$		-	0.1	-	nC
Gate-to-Source Charge	Q_{GS}		-	0.15	-	nC
Gate-to-Drain Charge	Q_{GD}		-	0.3	-	nC
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_d(ON)$	$V_{GS} = -4.5V, V_{DS} = -10V,$ $I_D = -450mA$ $R_G = 6\Omega$	-	43	-	nS
Rise Time	t_r		-	137	-	nS
Turn-Off Delay Time	$t_d(OFF)$		-	1450	-	nS
Fall Time	t_f		-	2050	-	nS
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = -150mA$	-0.5	-0.65	-1.1	V

Note:

1. Surface mounted on FR4 Board using 1 square inch pad size, 1oz copper
2. Surface mounted on FR4 board using minimum pad size, 1oz copper
3. Pulse width < 380 μs , Single pulse
4. Maximum junction temperature $T_J = 150^\circ C$.
5. Pulse test: Pulse width < 380 us duty cycle < 2%.

Typical Characteristics

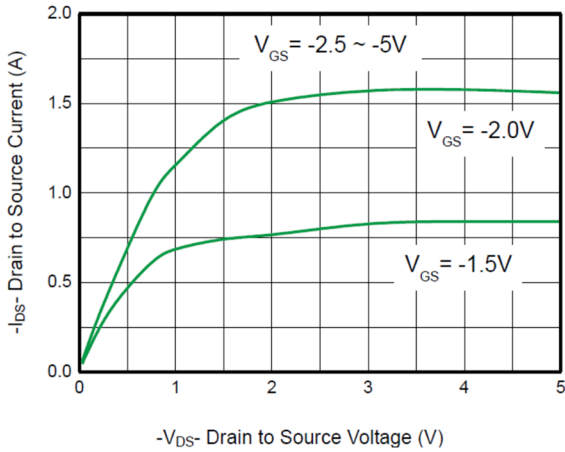


Fig 1. Output characteristics

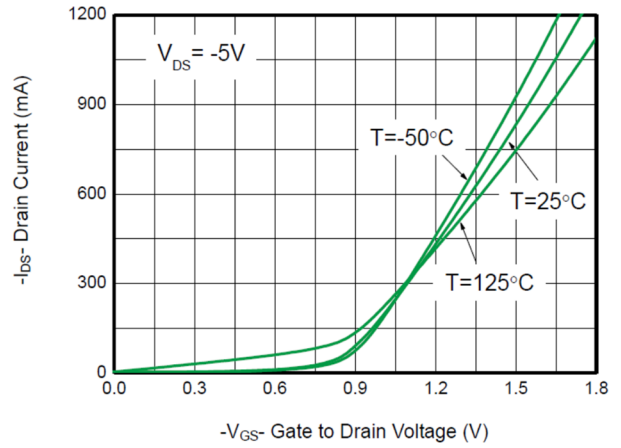


Fig 2. Transfer characteristics

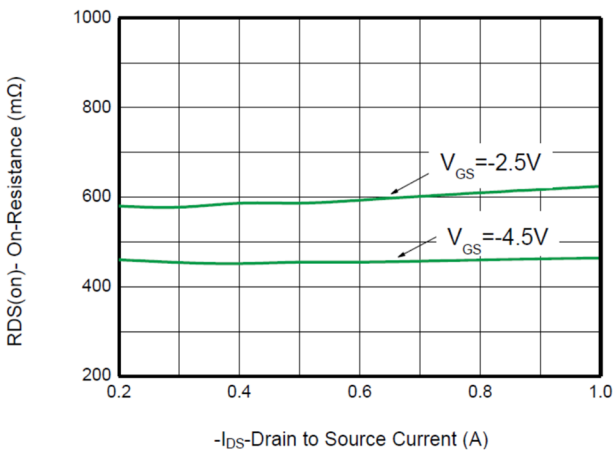


Fig 3. On-Resistance vs. Drain current

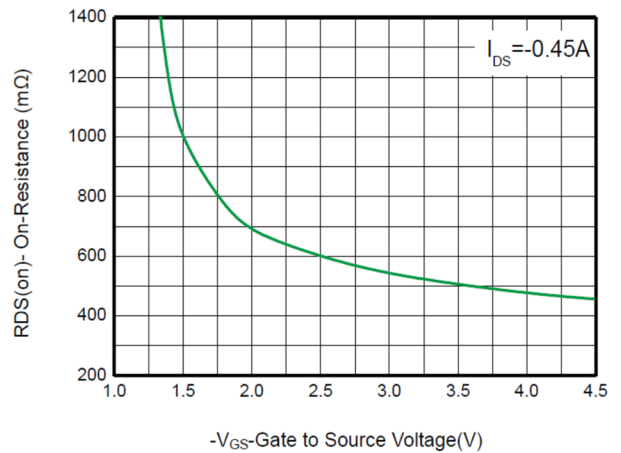


Fig 4. On-Resistance vs. Gate-to-Source voltage

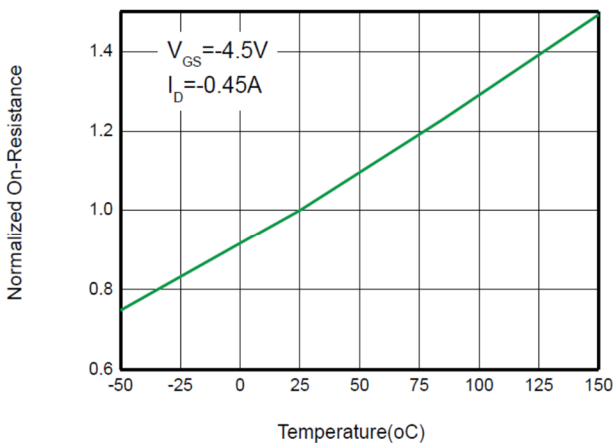


Fig 5. On-Resistance vs. Junction temperature

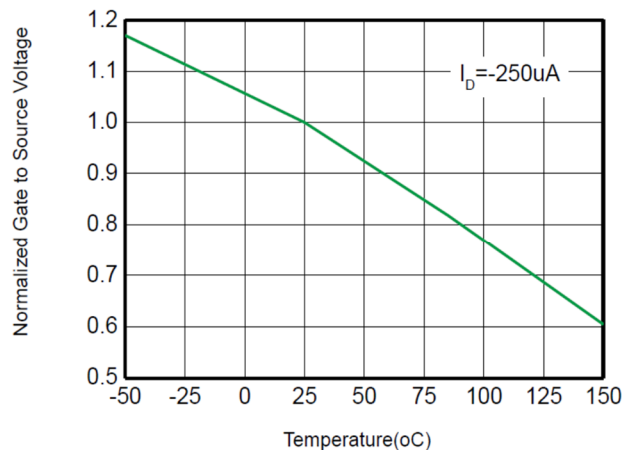


Fig 6. Threshold voltage vs. Temperature

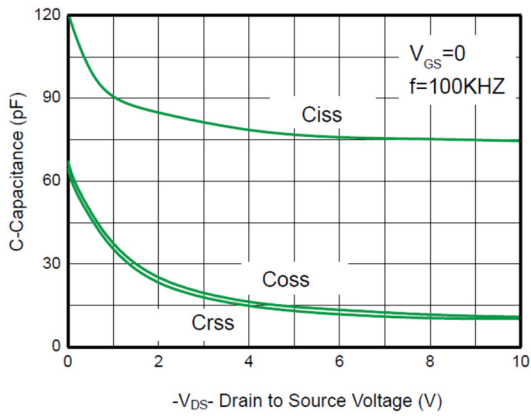


Fig 7. Capacitance.

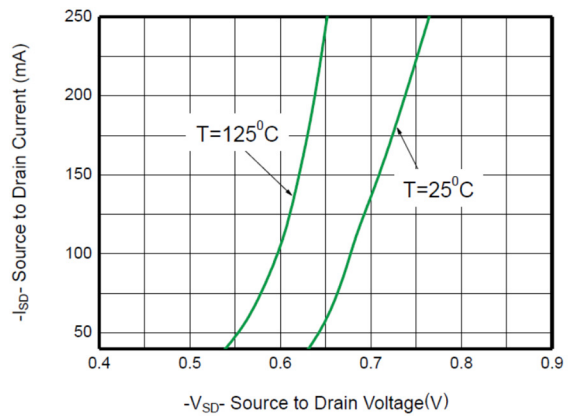
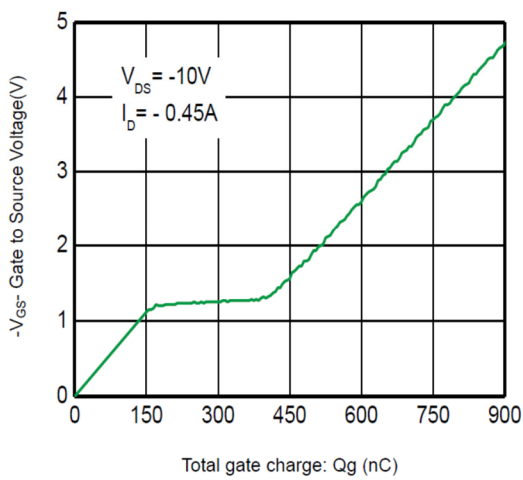
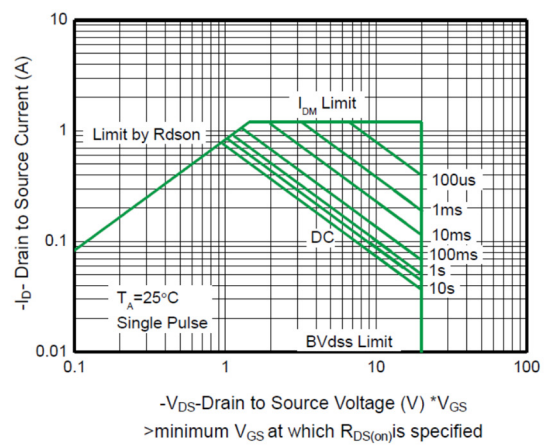
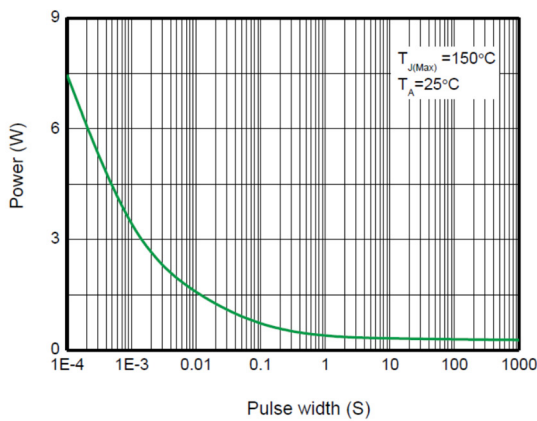
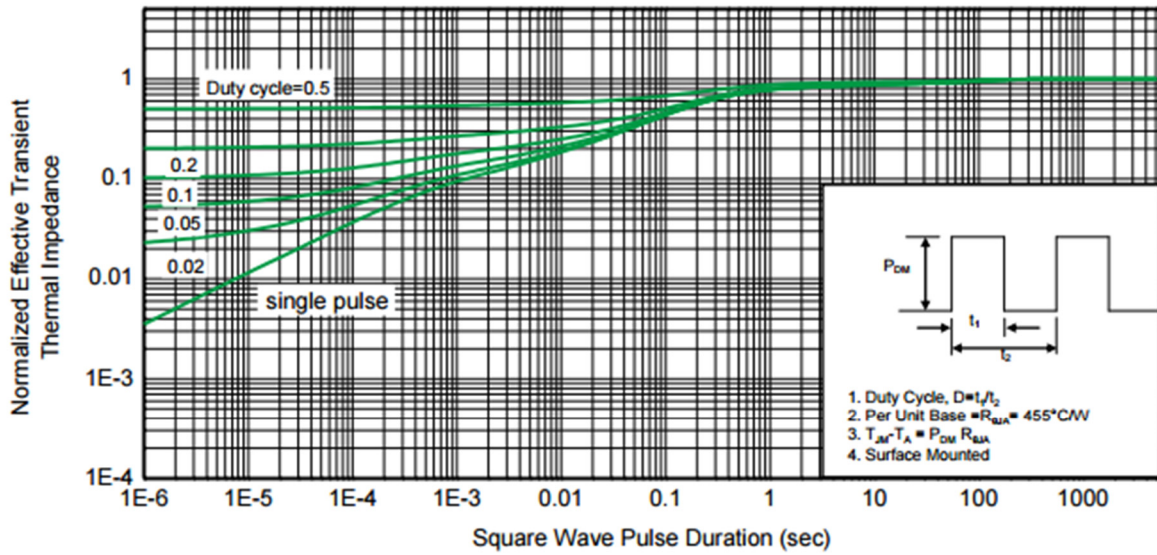


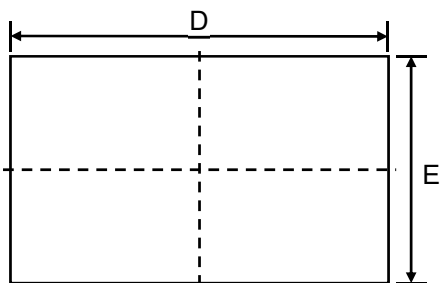
Fig 8. Body diode forward voltage



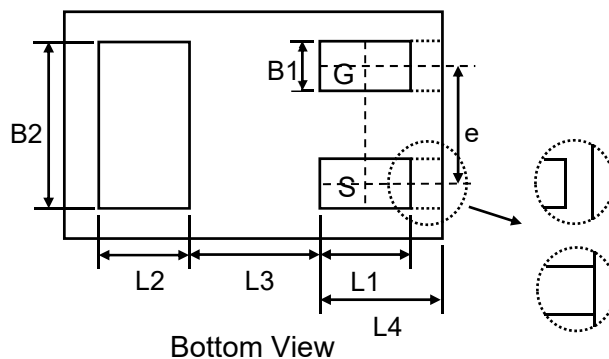


Transient thermal response (Junction-to-Ambient)

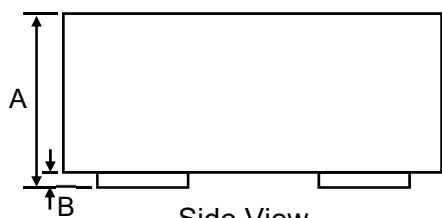
Product dimension (DFN1006-3L)



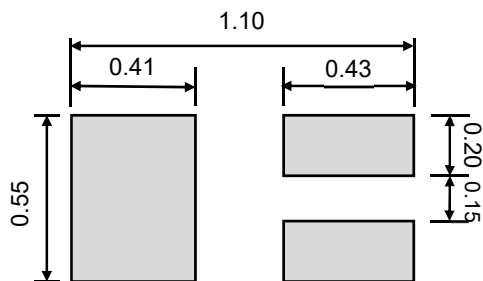
Top View



Bottom View



Side View



Suggested PCB Layout

Unit:mm

Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.33	0.55	0.013	0.022
B	0.00	0.05	0.000	0.002
B1	0.10	0.20	0.004	0.008
B2	0.45	0.55	0.018	0.022
D	0.90	1.05	0.035	0.041
E	0.50	0.65	0.020	0.026
e	0.35		0.014	
L1	0.20	0.30	0.008	0.012
L2	0.20	0.30	0.008	0.012
L3	0.39		0.015	
L4	0.25	0.35	0.010	0.014

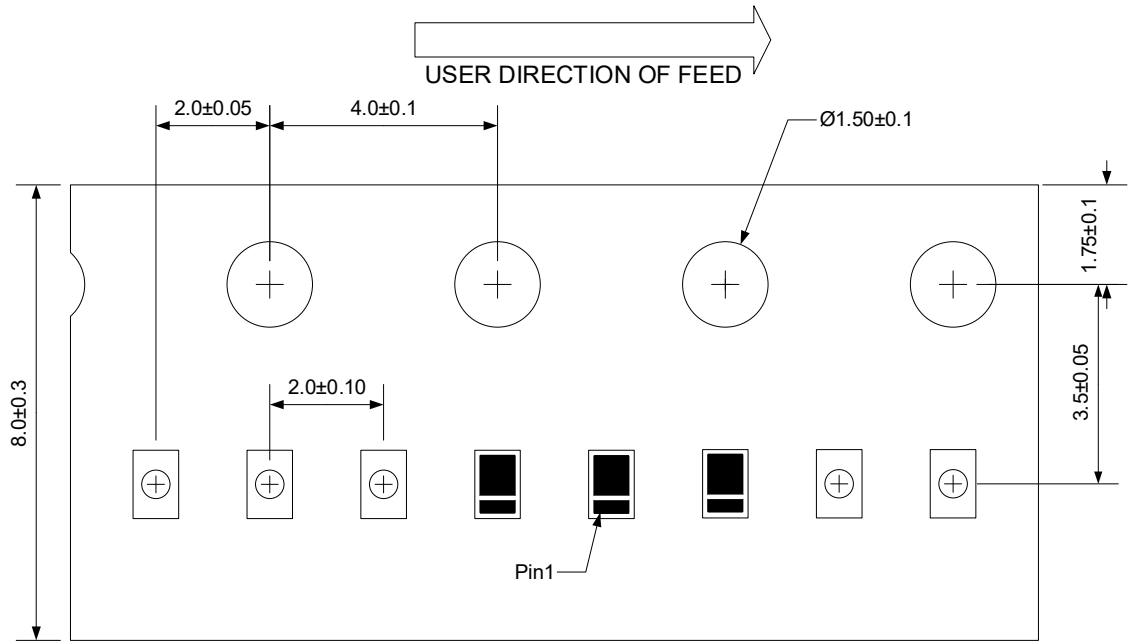
Marking information



Ordering information


Device	Package	Reel	Shipping
PPM3FD20V1EMN	DFN1006-3L(Pb-Free)	7"	10000 / Tape & Reel

Load with information



Unit:mm


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