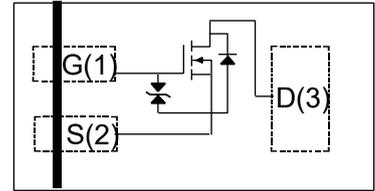


### Description

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

MOSFET Product Summary		
V <sub>DS</sub> (V)	R <sub>DS(on)</sub> (mΩ)	I <sub>D</sub> (A)
20	200@ V <sub>GS</sub> =4.5V	±1
	250@ V <sub>GS</sub> =2.5V	
	310@ V <sub>GS</sub> =1.8V	



Top View

### Absolute maximum rating@25°C

Parameter		Symbol	Value	Units
Drain-Source Voltage		V <sub>DS</sub>	20	V
Gate-Source Voltage		V <sub>GS</sub>	±10	V
Continuous Drain Current	Continuous	I <sub>D</sub>	±1	A
	Pulsed	I <sub>DP</sub>	±4	
Total power dissipation		P <sub>D</sub>	300	mW
Channel temperature		T <sub>J</sub>	150	°C
Range of storage temperature		T <sub>STG</sub>	-55 to +150	°C

### Thermal resistance

Parameter	Symbol	Limits	Units
Channel to ambient	R <sub>th(ch-a)</sub>	420	°C/W

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D = 1mA, V_{GS} = 0V$	20	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 20V, V_{GS} = 0V$	-	-	1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 8V$	-	-	$\pm 10$	$\mu A$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.4	-	0.9	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 0.65A$	-	200	250	$m\Omega$
		$V_{GS} = 2.5V, I_D = 0.45A$	-	250	300	$m\Omega$
		$V_{GS} = 1.8V, I_D = 0.25A$	-	310	450	$m\Omega$
Forward transfer admittance	$g_{FS}$	$V_{DS} = 10V, I_D = 300mA$	-	1.6	-	s
Input Capacitance	$C_{ISS}$	$V_{GS} = 0V, V_{DS} = 10V,$ $f = 1MHz$	-	48	-	$pF$
Output Capacitance	$C_{OSS}$		-	13	-	$pF$
Reverse Transfer Capacitance	$C_{RSS}$		-	10	-	$pF$
Total Gate Charge	$Q_G$	$V_{GS} = 4.5V, V_{DS} = 10V,$ $I_D = 0.01A$	-	1.0	-	$nC$
Gate-Source Charge	$Q_{GS}$		-	0.1	-	$nC$
Gate-Drain Charge	$Q_{GD}$		-	0.42	-	$nC$
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 6V, V_{GS} = 4.5V,$ $R_G = 50\Omega, R_L = 12\Omega,$ $I_D = 500mA$	-	9	-	ns
Turn-Off Delay Time	$t_{d(off)}$		-	40	-	ns
Turn-On Rise Time	$t_r$		-	4	-	ns
Turn-On Fall Time	$t_f$		-	18	-	ns
Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS} = 0V, I_S = 100mA$	-	0.7	1	V

Typical Characteristics

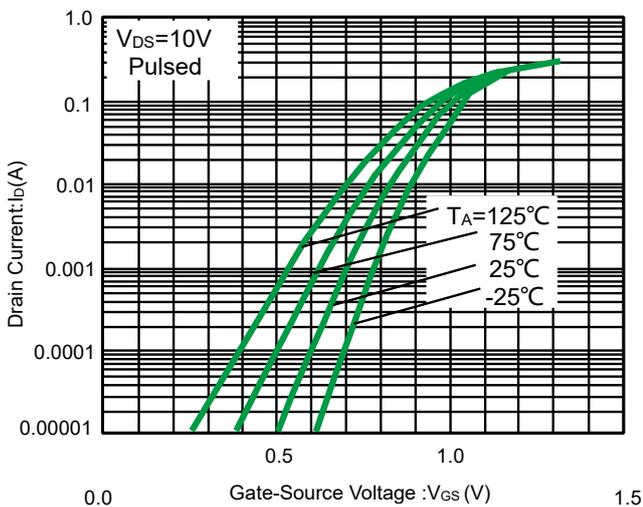


Fig 1. Typical transfer Characteristics

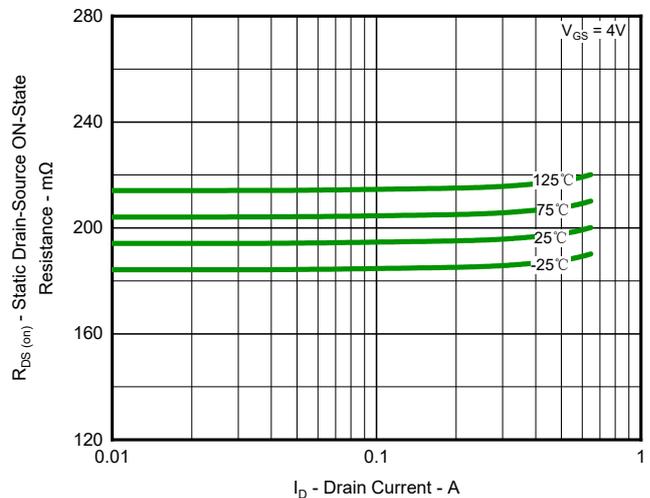


Fig 2. Static drain-source on-state resistance vs. drain current ( I )

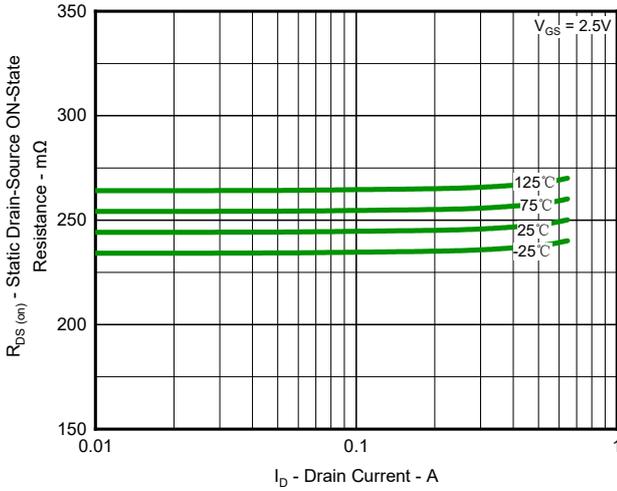


Fig 3. Static drain-source on-state resistance Vs. drain current (II)

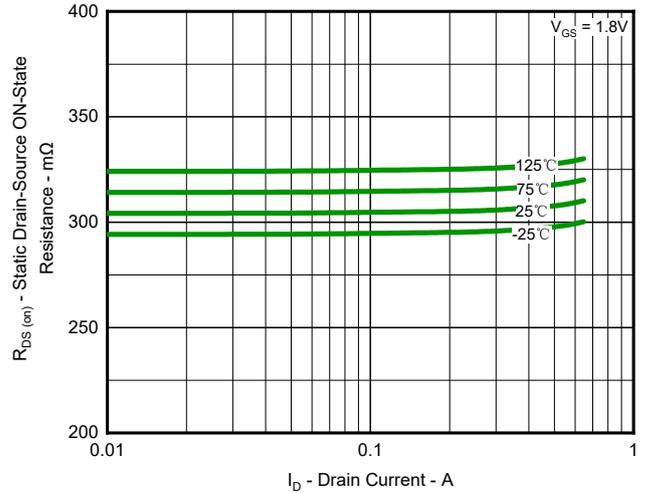


Fig 4. Static drain-source on-state resistance vs. drain current (III)

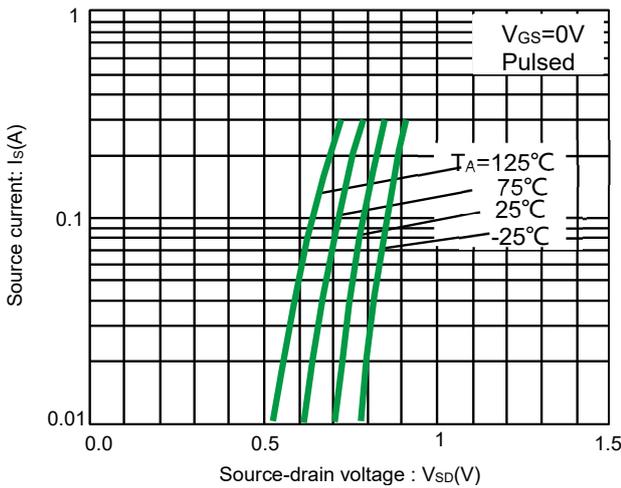


Fig 5. Source current vs. source-drain voltage

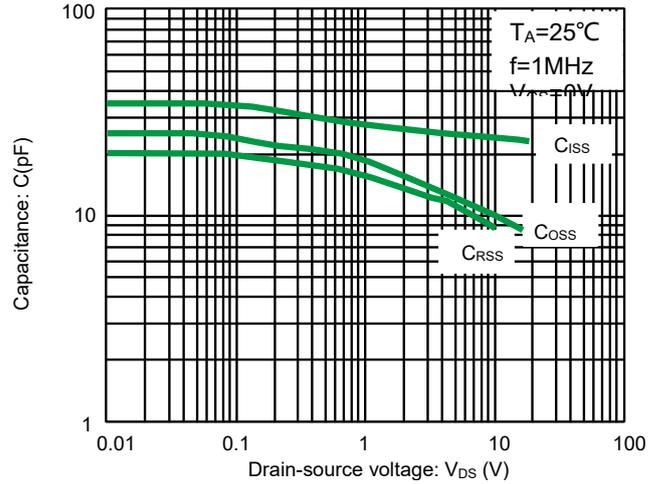


Fig 6. Typical capacitance vs. drain-source voltage

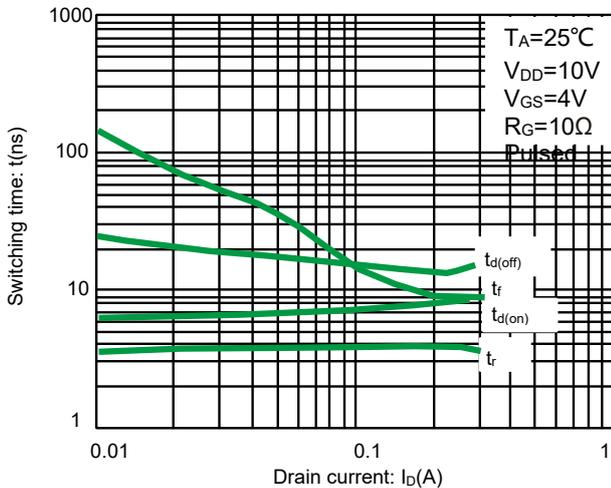


Fig 7. Switching characteristics

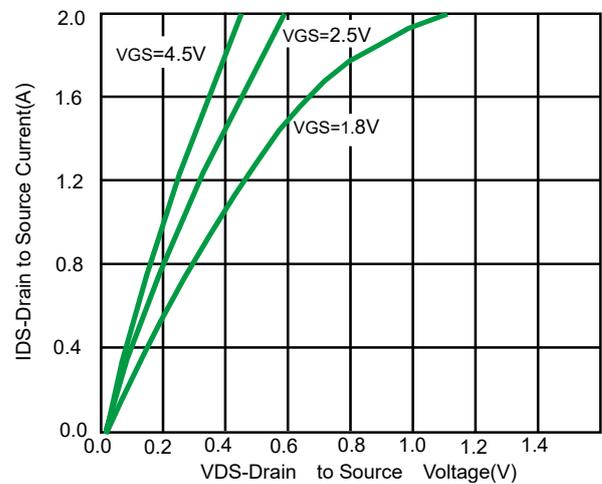


Fig 8. Output characteristics

Switching characteristics measurement circuit

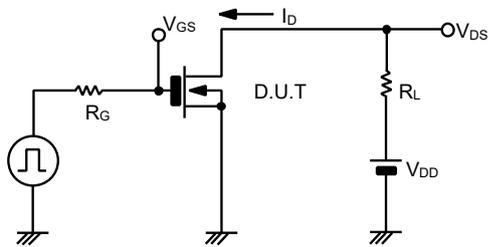


Fig.8 Switching time measurement circuit

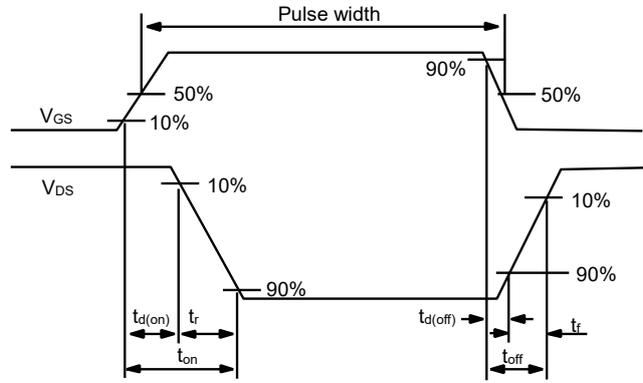
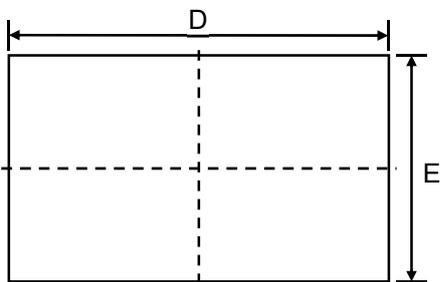
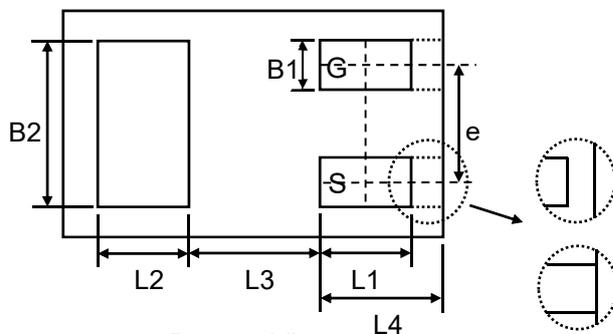


Fig.9 Switching time waveforms

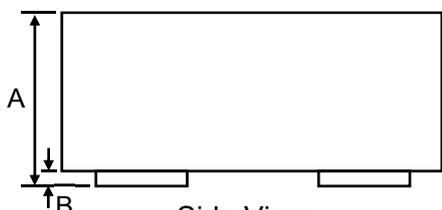
Product dimension (DFN1006-3L)



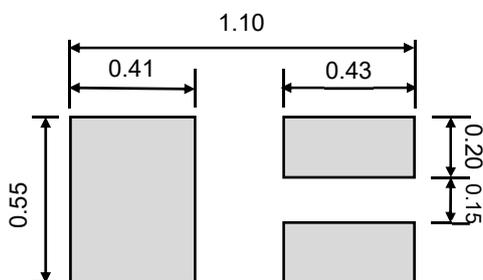
Top View



Bottom View



Side View



Suggested PCB Layout

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

Unit: mm

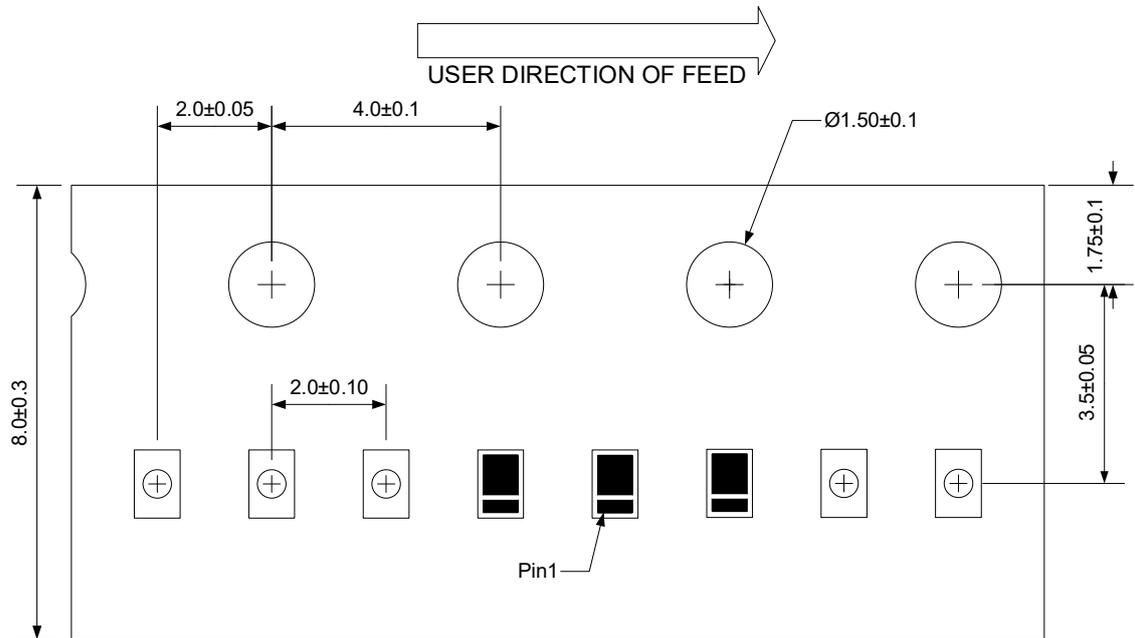
Marking information



Ordering information

Device	Package	Reel	Shipping
PNM3FD20V1EMN	DFN1006-3L(Pb-Free)	7"	10000 / Tape & Reel

Load with information



Unit:mm

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