

Description

The PNM3FD30V1EN uses advanced trench technology to provide excellent $R_{DS(on)}$, low gate charge. This device is suitable for use as a load switch or in PWM applications.

MOSFET Product Summary

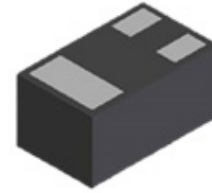
$V_{DS}(V)$	$R_{DS(on)}(m\Omega)$	$I_D(A)$
30	218 @ $V_{GS} = 4.5V$	1.5
	268 @ $V_{GS} = 2.5V$	

Feature

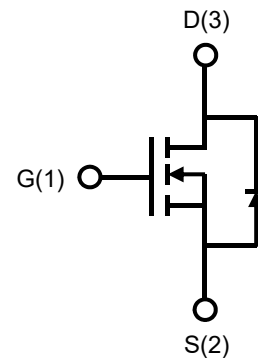
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

Applications

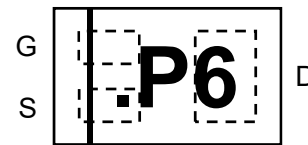
- PWM applications
- Load switch
- Power management
- DC-DC Converters
- Wireless Chargers



**DFN1006-3L
(Bottom View)**



Circuit Diagram



Marking (Top View)

Absolute maximum rating@25°C

Rating		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 8	V
Drain Current-Continuous ¹⁾	$T_C=25^\circ C$	I_D	1.5	A
	$T_C=100^\circ C$		1.0	
Pulsed Drain Current ²⁾		I_{DM}	3.0	A
Total Power Dissipation ³⁾		P_D	1.2	W
Thermal Resistance Junction-to-Ambient ⁴⁾		$R_{\theta JA}$	102	$^\circ C/W$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ C$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V$	-	-	1.0	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 8V, V_{DS} = 0V$	-	-	± 10	μA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	0.9	1.1	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 0.5A$	-	218	300	m Ω
		$V_{GS} = 2.5V, I_D = 0.3A$	-	268	400	
		$V_{GS} = 1.8V, I_D = 0.1A$	-	386	500	
Dynamic Characteristics⁵⁾						
Input Capacitance	C_{iss}	$V_{DS} = 15V, V_{GS} = 0V,$ $f = 1.0MHz$	-	15.7	-	pF
Output Capacitance	C_{oss}		-	11.7	-	
Reverse Transfer Capacitance	C_{rss}		-	3.64	-	
Switching Characteristics⁵⁾						
Turn-on Delay Time	$t_{d(on)}$	$V_{DS} = 15V, V_{GS} = 4.5V,$ $R_G = 10\Omega, I_D = 0.5A$	-	5.87	-	ns
Turn-on Rise Time	t_r		-	3.33	-	
Turn-Off Delay Time	$t_{d(off)}$		-	27.87	-	
Turn-Off Fall Time	t_f		-	7.93	-	
Total Gate Charge	Q_g	$V_{DS} = 15V, V_{GS} = 4.5V,$ $I_D = 0.5A$	-	0.58	-	nC
Gate-Source Charge	Q_{gs}		-	0.14	-	
Gate-Drain Charge	Q_{gd}		-	0.07	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = 0.3A$	-	0.95	1.2	V

Notes:

1. Computed continuous current assumes the condition of T_{J_Max} while the actual continuous current depends on the thermal & electro-mechanical application board design.
2. Repetitive Rating: Pulse width limited by maximum junction temperature($T_{J_Max}=150^\circ C$).
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout, $R_{DS(on)(T_{J_max})} = 500m\Omega$. The value in any given application depends on the user's specific board design. The maximum current rating is package limited.
5. Guaranteed by design, not subject to production.

Typical Characteristics

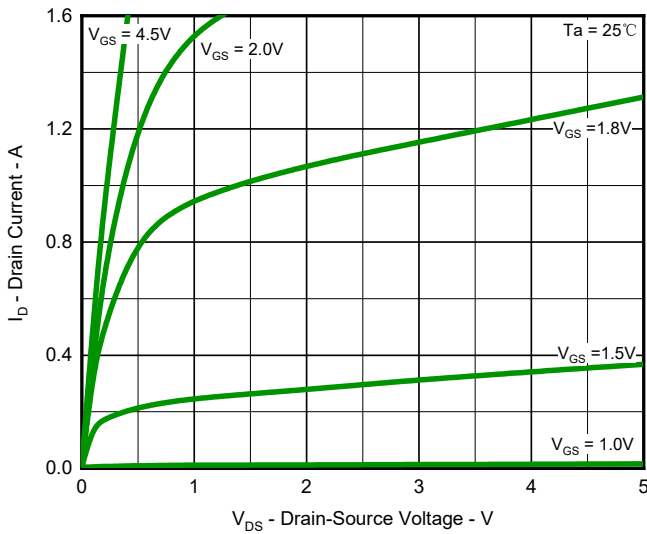


Fig.1 Output Characteristics

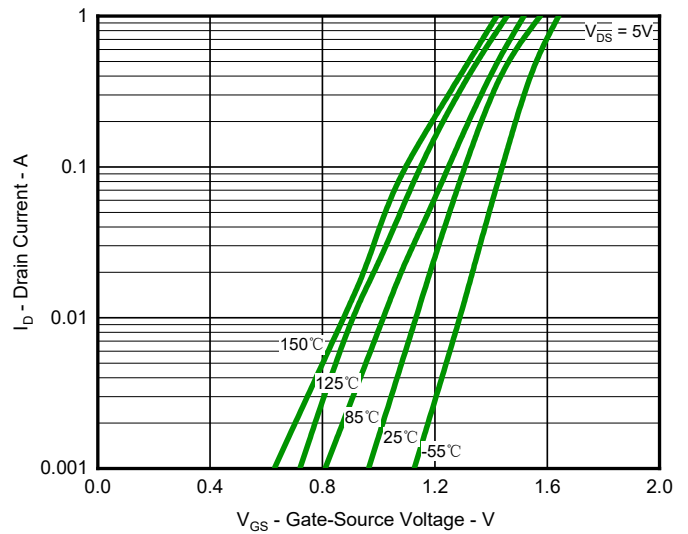


Fig.2 Typical Transfer Characteristic

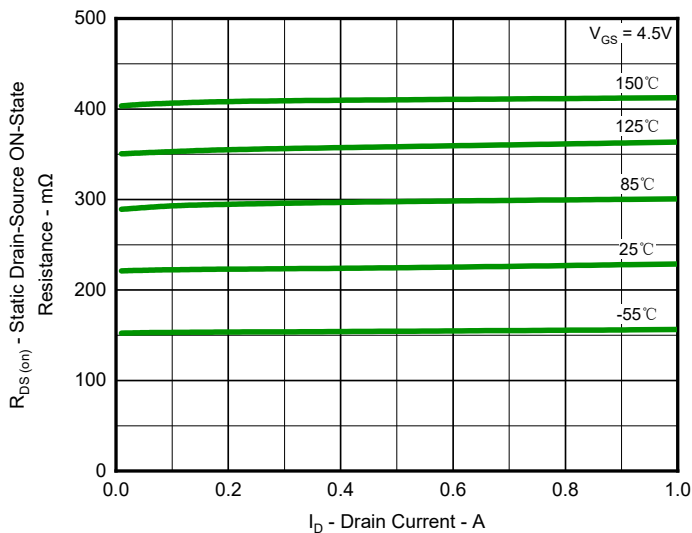


Fig.3 Typical On-Resistance vs Drain Current and Temperature

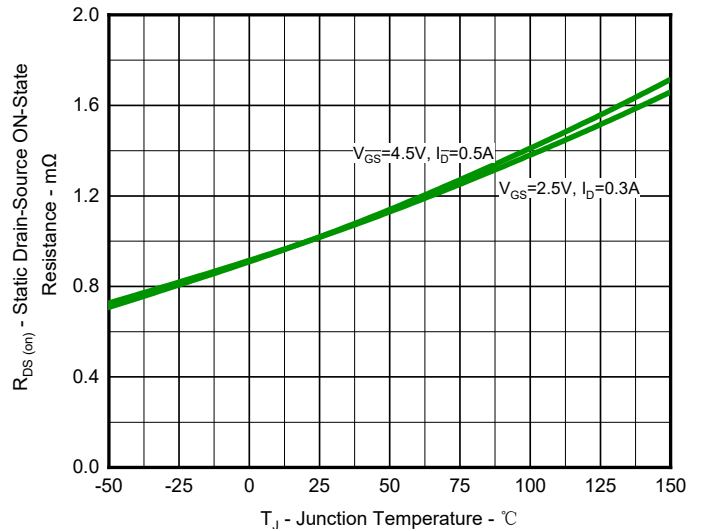


Fig.4 On-Resistance Variation with Temperature

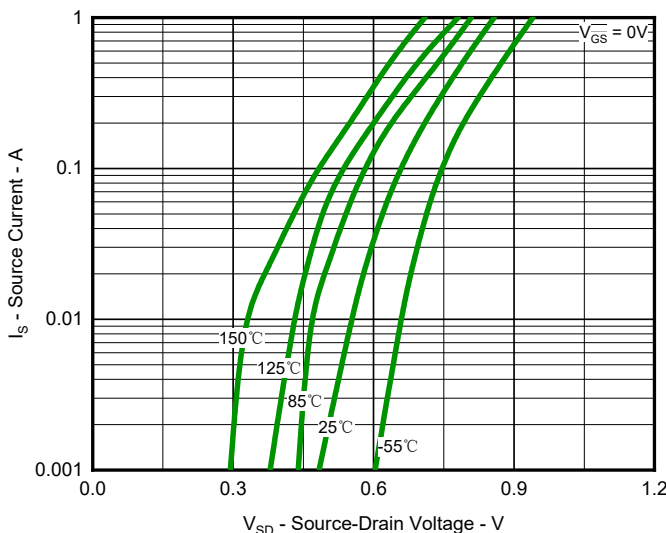


Fig.5 Diode Forward Voltage vs. Current

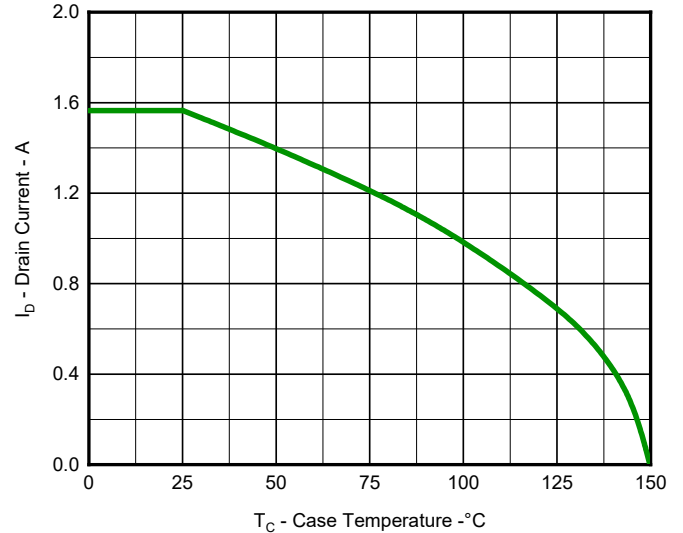


Fig.6 Maximum Drain Current vs. Case Temperature

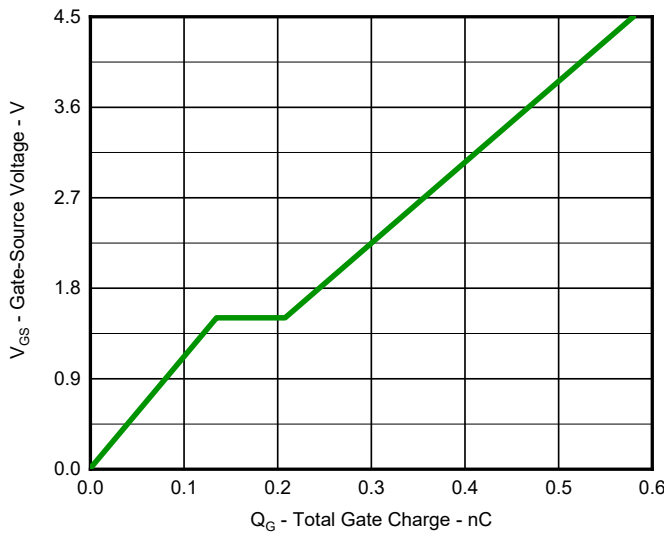


Fig.7 Gate Charge Characteristics

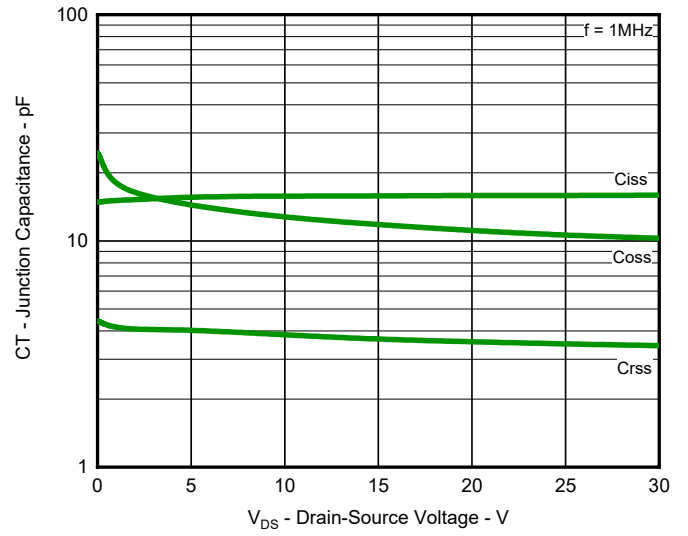


Fig.8 Typical Junction Capacitance

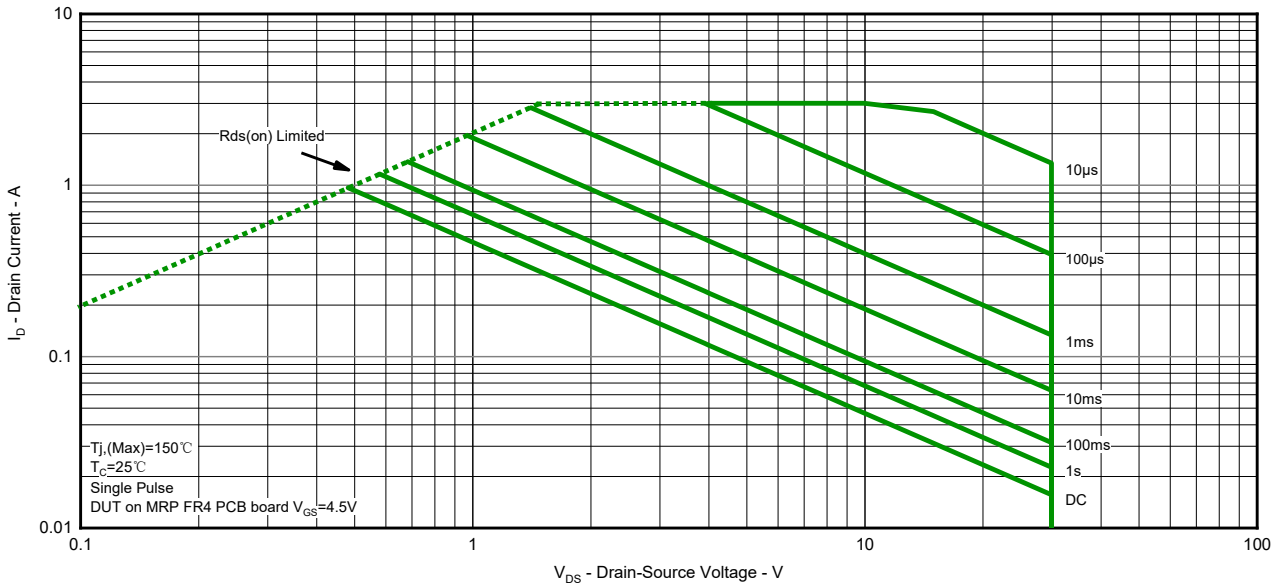


Fig.9 Safe Operation Area

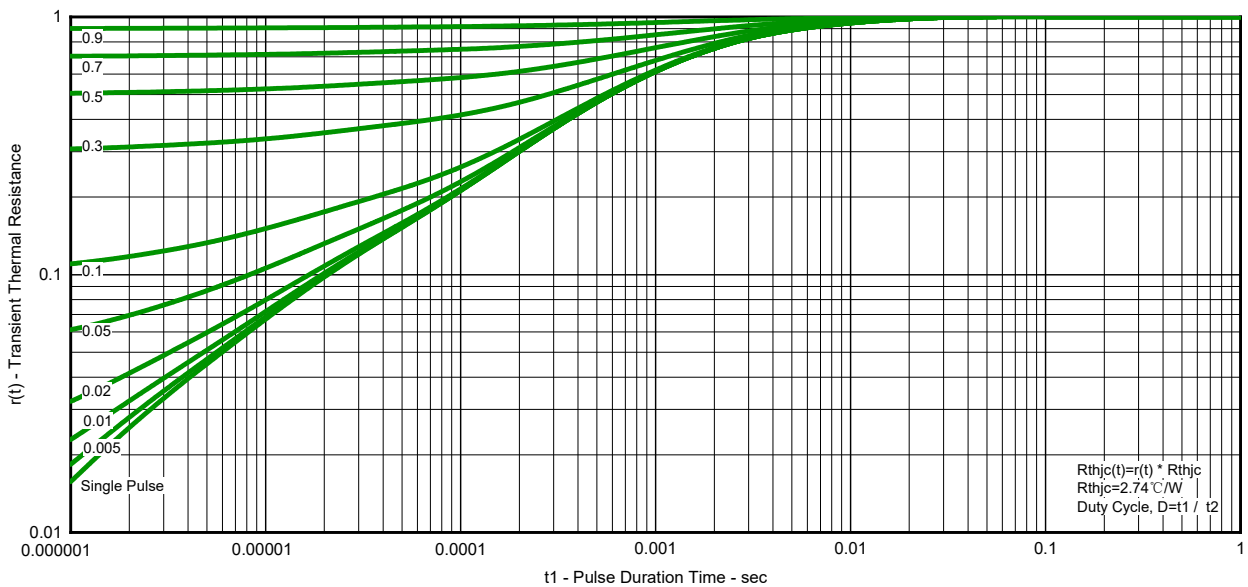
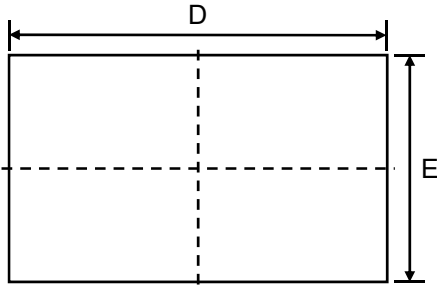
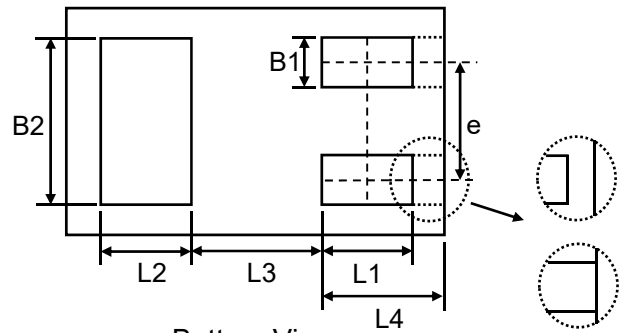


Fig.10 Transient Thermal Resistance

Product Dimension (DFN1006-3L)



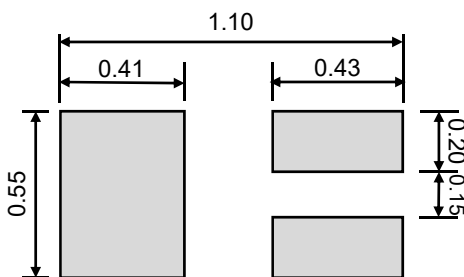
Top View



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

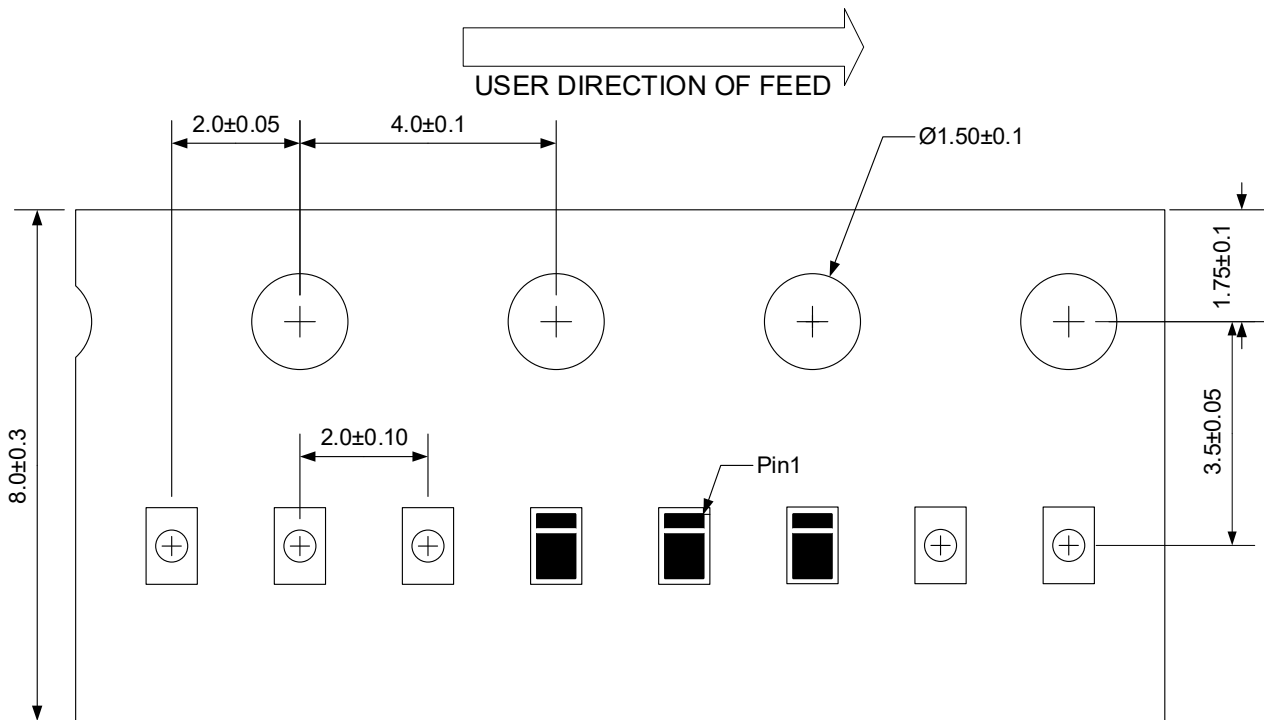
N-Channel MOSFET

PNM3FD30V1EN

Ordering information


Device	Package	Reel	Shipping
PNM3FD30V1EN	DFN1006-3L(Pb-Free)	7"	10000 / Tape & Reel

Load with information



Unit:mm


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