

Description

The PPM3FD15V3LN uses advanced trench technology to provide excellent $R_{DS(on)}$ and low gate charge. This device is suitable for power management and high efficiency applications at high switching frequencies applications.

MOSFET Product Summary

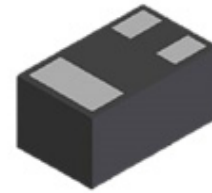
$V_{DS}(V)$	$R_{DS(on)}(m\Omega)(Typ)$	$I_D(A)$
-15	50 @ $V_{GS} = -4.5V$	-4.5
	69 @ $V_{GS} = -2.5V$	

Feature

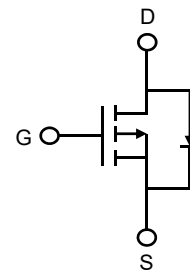
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

Applications

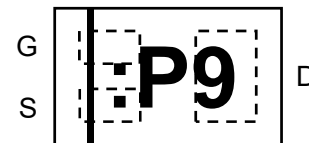
- PWM applications
- Load switch
- Power management
- DC-DC Converters
- Wireless Chargers



DFN1006-3L
(Bottom View)



Circuit Diagram



Marking (Top View)

Absolute maximum rating@25°C

Rating		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	-15	V
Gate-Source Voltage		V_{GS}	± 10	V
Drain Current-Continuous ¹⁾	$T_C=25^\circ C$	I_D	-4.5	A
	$T_C=100^\circ C$		-2.9	
Pulsed Drain Current ²⁾		I_{DM}	-18	A
Total Power Dissipation ³⁾		P_D	1.6	W
Thermal Resistance , Junction-to-Case ⁴⁾		$R_{\theta JC}$	17	$^\circ C/W$
Thermal Resistance , Junction-to-Ambient ⁴⁾		$R_{\theta JA}$	76	$^\circ C/W$
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 = -250μA	-15	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -15V, V _{GS} = 0V	-	-	-1.0	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±10V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.4	-0.7	-1.1	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} = -4.5V, I _D = -0.5A	-	50	66	mΩ
		V _{GS} = -2.5V, I _D = -0.5A	-	69	90	
		V _{GS} = -1.8V, I _D = -0.5A	-	99	145	
Dynamic Characteristics ⁵⁾						
Input Capacitance	C _{iss}	V _{DS} = -8V, V _{GS} = 0V, f = 1.0MHz	-	78	-	pF
Output Capacitance	C _{oss}		-	42	-	
Reverse Transfer Capacitance	C _{rss}		-	14	-	
Switching Characteristics ⁵⁾						
Turn-on Delay Time	t _{d(on)}	V _{DS} = -8V, V _{GS} = -4.5V, R _G = 2Ω, I _D = -0.5A	-	5.4	-	ns
Turn-on Rise Time	t _r		-	15	-	
Turn-Off Delay Time	t _{d(off)}		-	4.9	-	
Turn-Off Fall Time	t _f		-	3.7	-	
Total Gate Charge	Q _g	V _{DS} = -8V, V _{GS} = -4.5V, I _D = -0.5A	-	2.2	-	nC
Gate-Source Charge	Q _{gs}		-	0.6	-	
Gate-Drain Charge	Q _{gd}		-	0.7	-	
Gate Resistance	R _g	f=1MHz, Open Drain	-	351	-	Ω
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = -0.5A	-	-0.8	-1.1	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 minimum recommended pad layout
5. Guaranteed by design, not subject to production.

Typical Characteristics

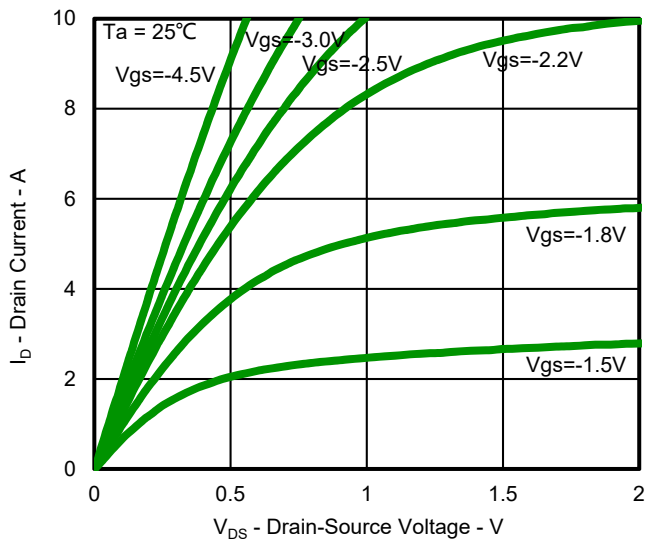


Fig.1 Output Characteristics

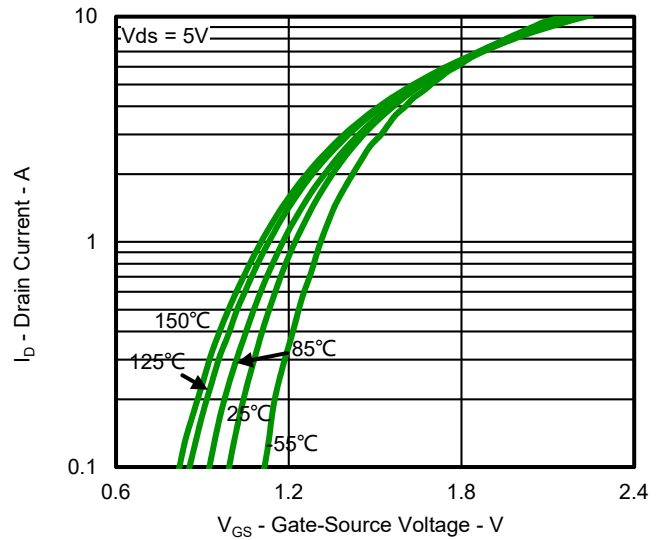


Fig.2 Typical Transfer Characteristic

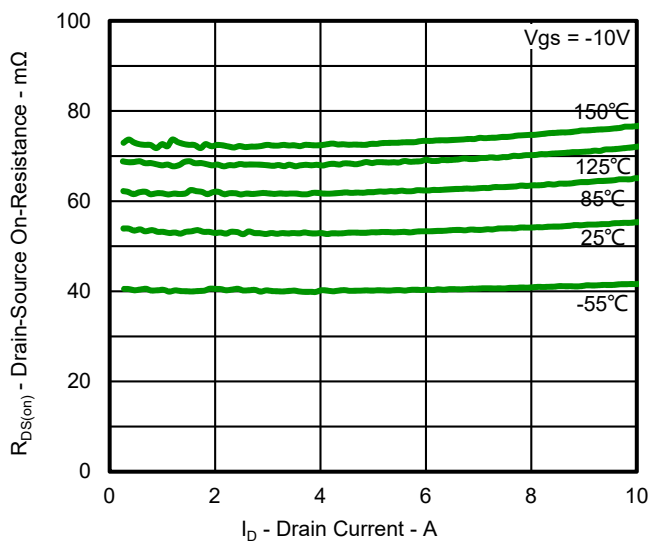


Fig.3 Typical On-Resistance vs Drain Current and Temperature

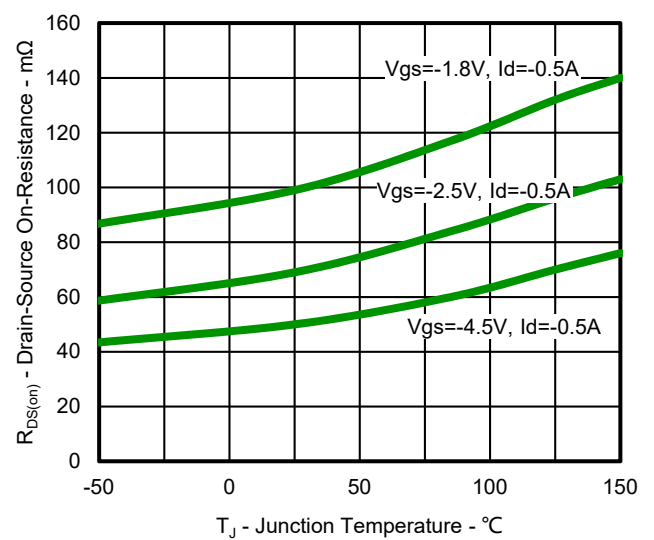


Fig.4 On-Resistance Variation with Temperature

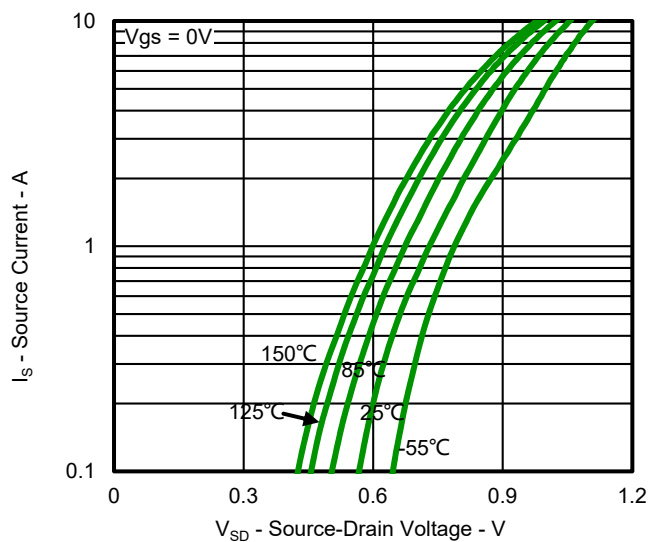


Fig.5 Diode Forward Voltage vs. Current

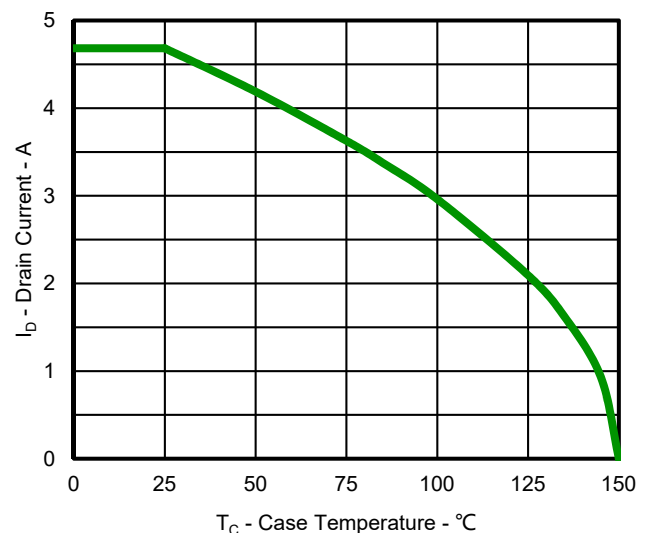


Fig.6 Maximum Drain Current vs. Case Temperature

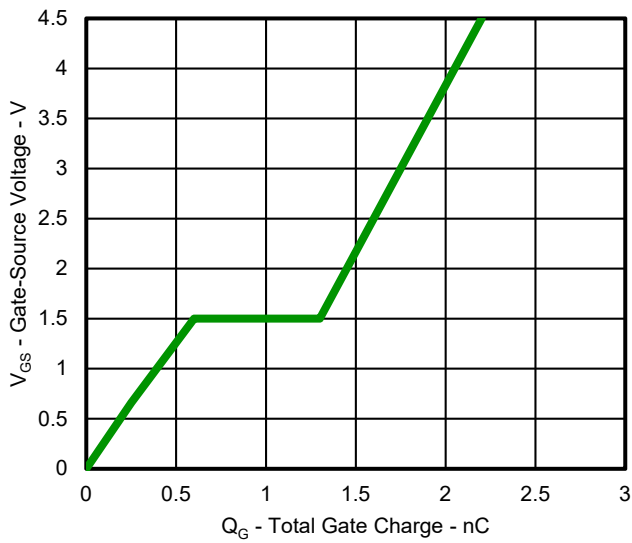


Fig.7 Gate Charge Characteristics

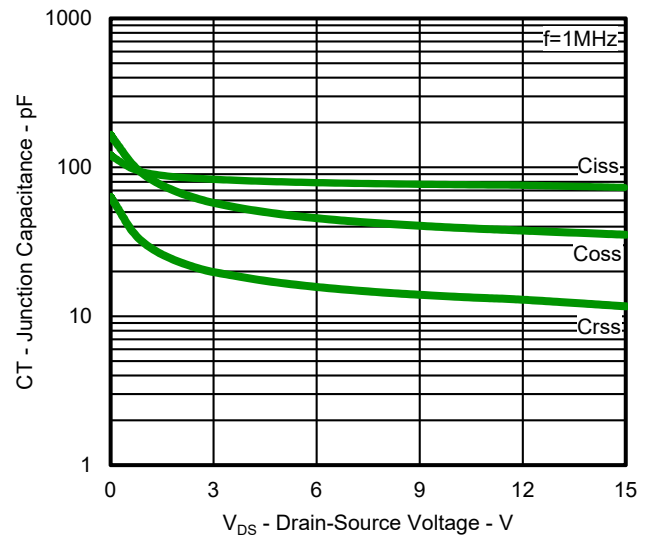


Fig.8 Typical Junction Capacitance

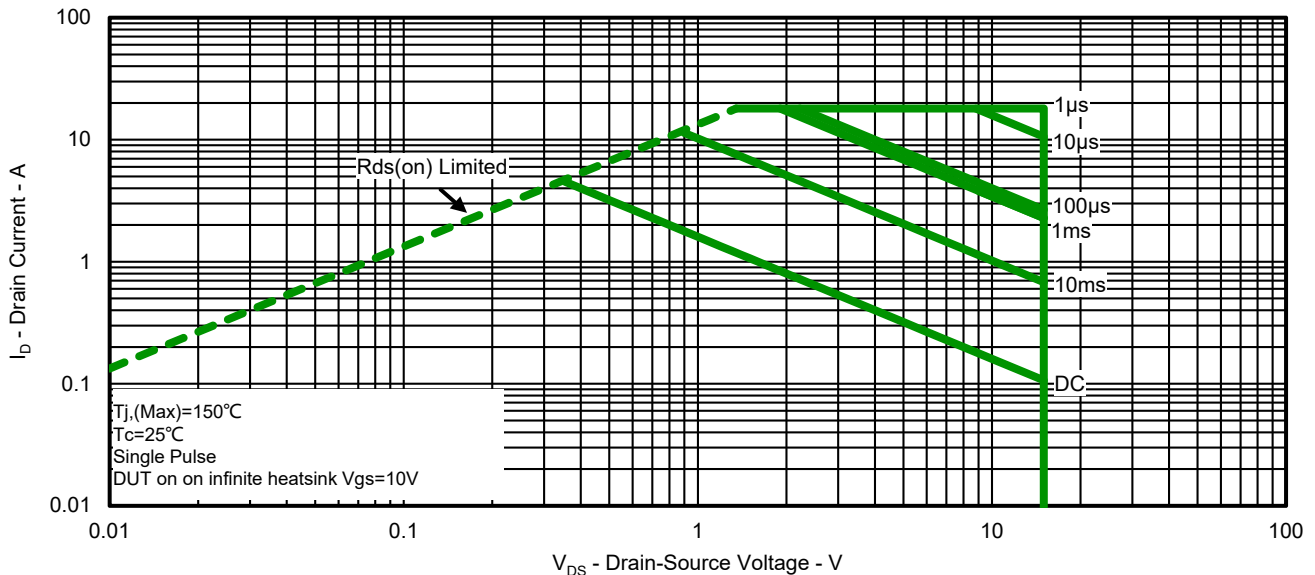


Fig.9 Safe Operation Area

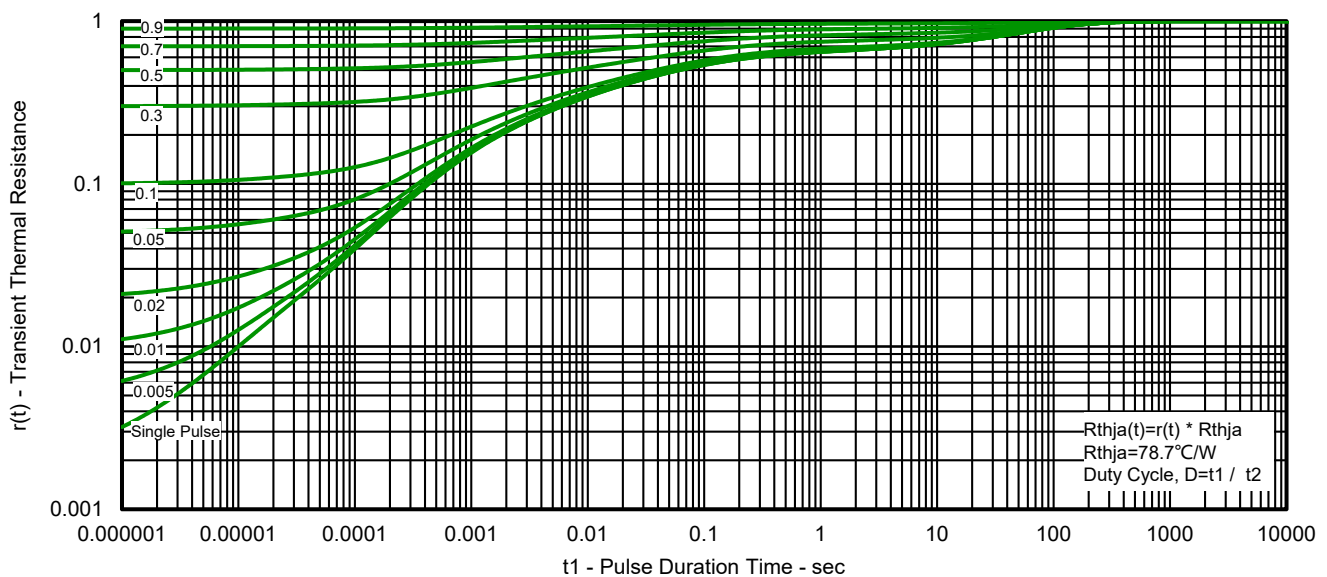
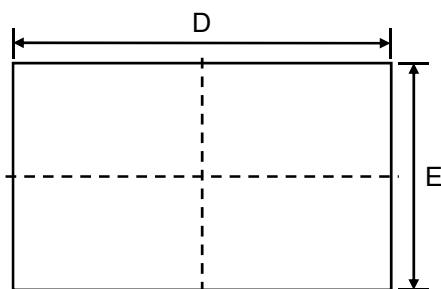
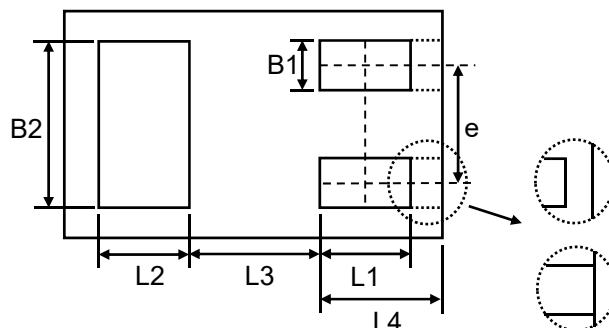


Fig.10 Transient Thermal Resistance

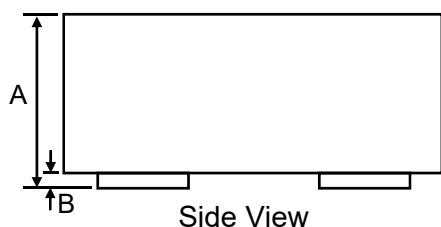
Product Dimension (DFN1006-3L)



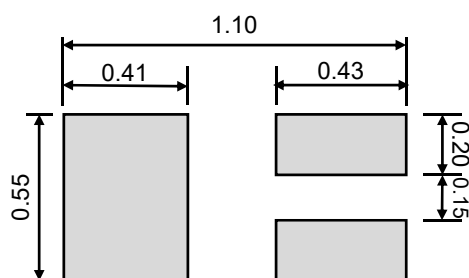
Top View



Bottom View



Side View



Suggested PCB Layout

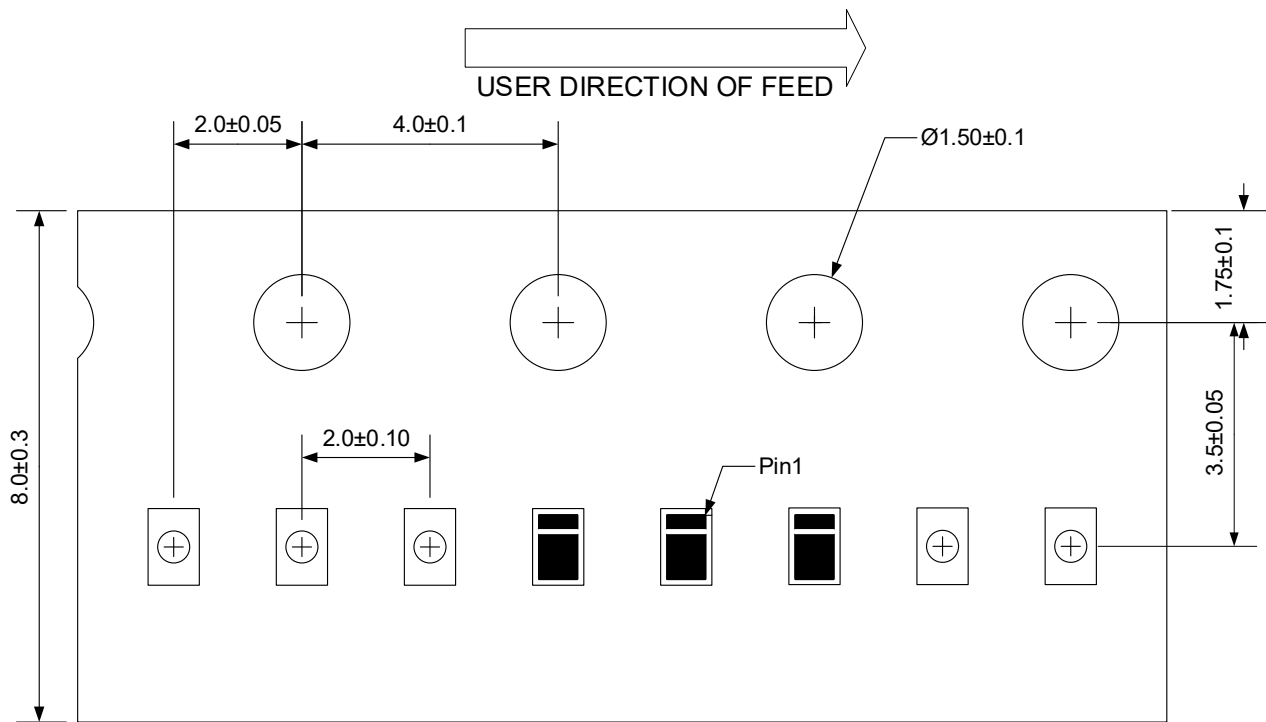
Unit: mm

Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.40	0.55	0.016	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

Ordering information

Package	Reel	Shipping
DFN1006-3L	7"	10000 / Tape & Reel

Load with information



Unit:mm

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