Prisemi®

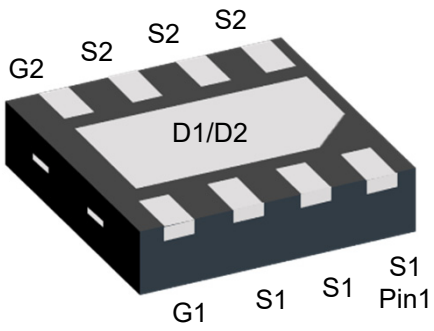
PDNM8PN18V15

N-Channel MOSFET

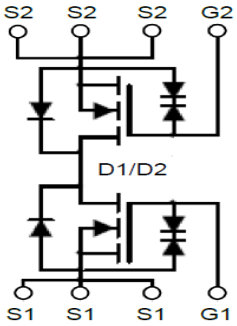
Description

The PDNM8PN18V15 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)	$R_{DS(on)}$(mΩ)	I_D(A)
18	4.6@ V_{GS} = 4.5V	20
	5.3@ V_{GS} = 2.5V	



DFN3030-8L
(Bottom View)



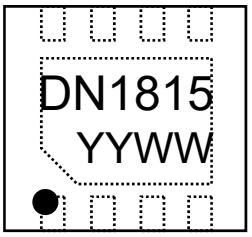
Circuit Diagram

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



Marking (Top View)

Absolute maximum rating@25℃

Rating		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	18	V
Gate-Source Voltage		V_{GS}	±10	V
Drain Current-Continuous[1)]	T_C=25℃	I_D	20	A
	T_C=100℃		12	
Pulsed Drain Current[2)]		I_{DM}	90	A
Total Power Dissipation[3)]		P_D	19.5	W
Avalanche Current		I_{AS}	44	A
Avalanche Energy		E_{AS}	100	mJ
Thermal Resistance Junction-to-Ambient[4)]		$R_{\theta JA}$	41.2	℃/W
Thermal Resistance Junction-to-Case[4)]		$R_{\theta JC}$	8.6	℃/W
Junction and Storage Temperature Range		T_J,T_{STG}	-55~+150	℃

Electrical characteristics per line@25℃ (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V,I_D = 250μA	18	21	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 18V,V_{GS} = 0V	-	-	1.0	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±10V,V_{DS} = 0V	-	-	±10	μA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS},I_D = 250μA	0.5	0.7	1.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} = 4.5V,I_D = 3A	-	4.6	5.5	mΩ
		V_{GS} = 4.0V,I_D = 3A	-	4.7	5.8	
		V_{GS} = 3.8V,I_D = 3A	-	4.8	6.0	
		V_{GS} = 3.1V,I_D = 3A	-	4.9	6.3	
		V_{GS} = 2.5V,I_D = 3A	-	5.3	6.5	
Dynamic Characteristics[5)]						
Input Capacitance	C_{lss}	V_{DS} = 10V,V_{GS} = 0V, f = 1.0KHz	-	2870	-	pF
Output Capacitance	C_{oss}		-	330	-	
Reverse Transfer Capacitance	C_{rss}		-	295	-	
Switching Characteristics[5)]						
Total Gate Charge	Q_g	V_{DS} = 10V, V_{GS} = 4.5V, I_D = 3A	-	24.8	-	nC
Gate-Source Charge	Q_{gs}		-	7.9	-	
Gate-Drain Charge	Q_{gd}		-	8.6	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS} = 0V,I_S = 1A	-	0.7	1.0	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℃).
3. 10us pulse, pulse duty cycle<=1%.
4. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout.
5. Guaranteed by design, not subject to production.

Typical Characteristics

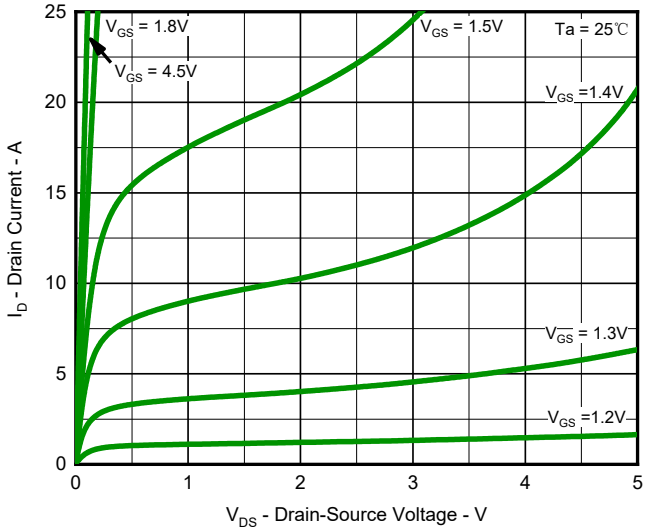


Fig.1 Output Characteristics

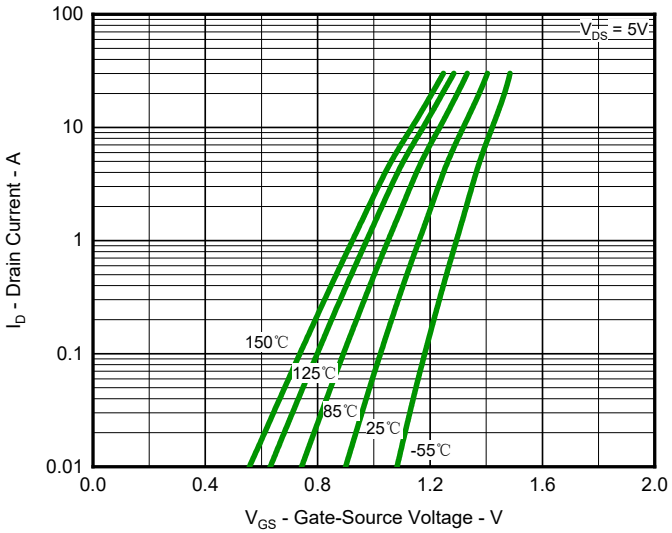


Fig.2 Typical Transfer Characteristic

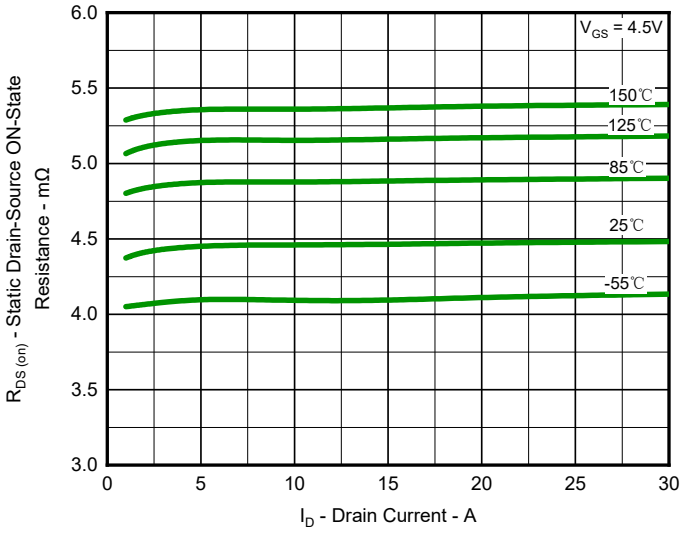


Fig.3 Typical On-Resistance vs Drain Current and Temperature

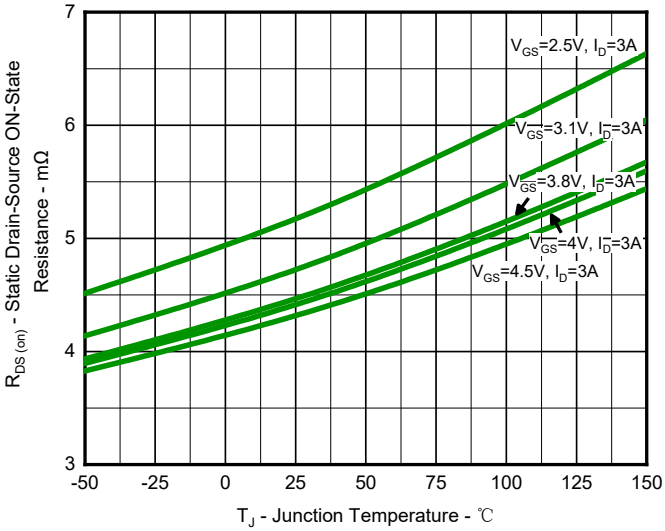


Fig.4 On-Resistance Variation with Temperature

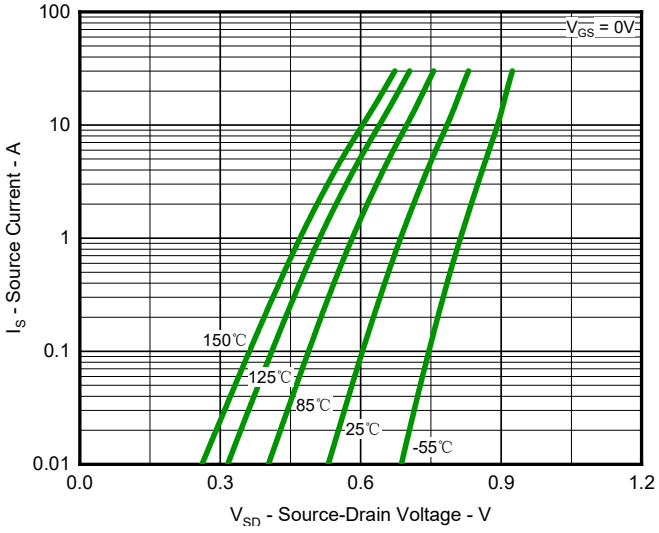


Fig.5 Diode Forward Voltage vs. Current

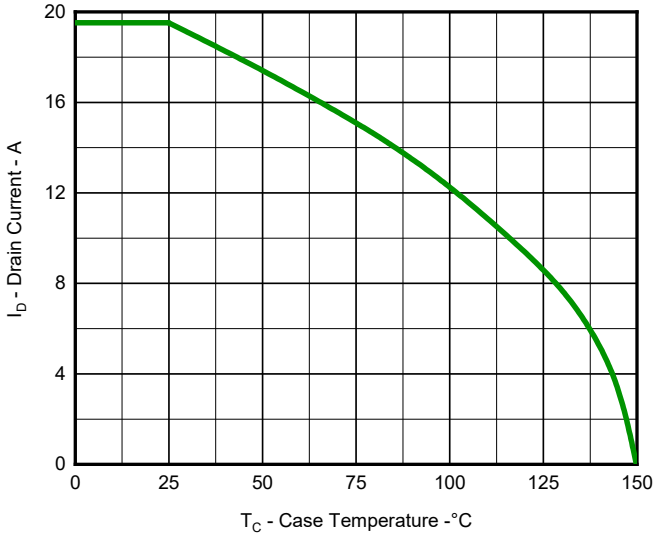


Fig.6 Maximum Drain Current vs. Case Temperature

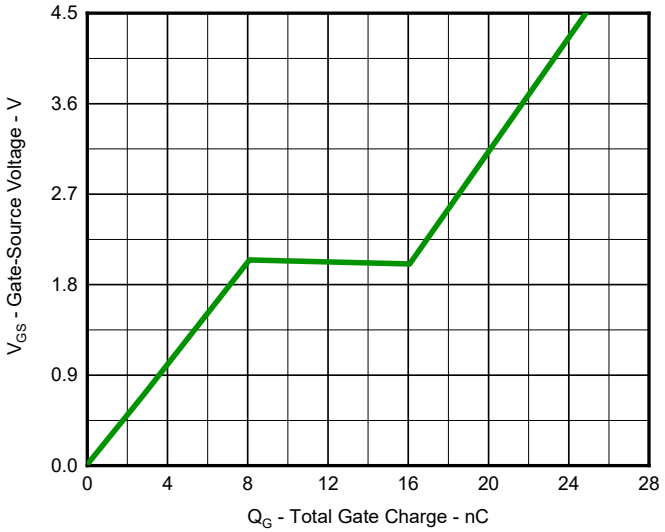


Fig.7 Gate Charge Characteristics

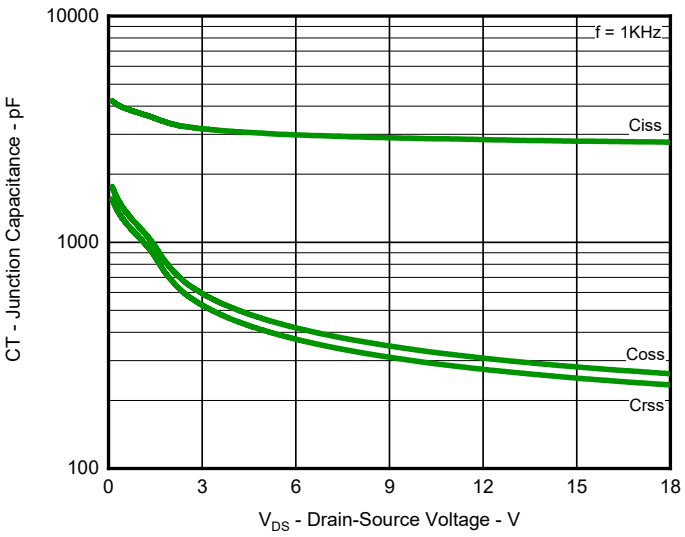


Fig.8 Typical Junction Capacitance

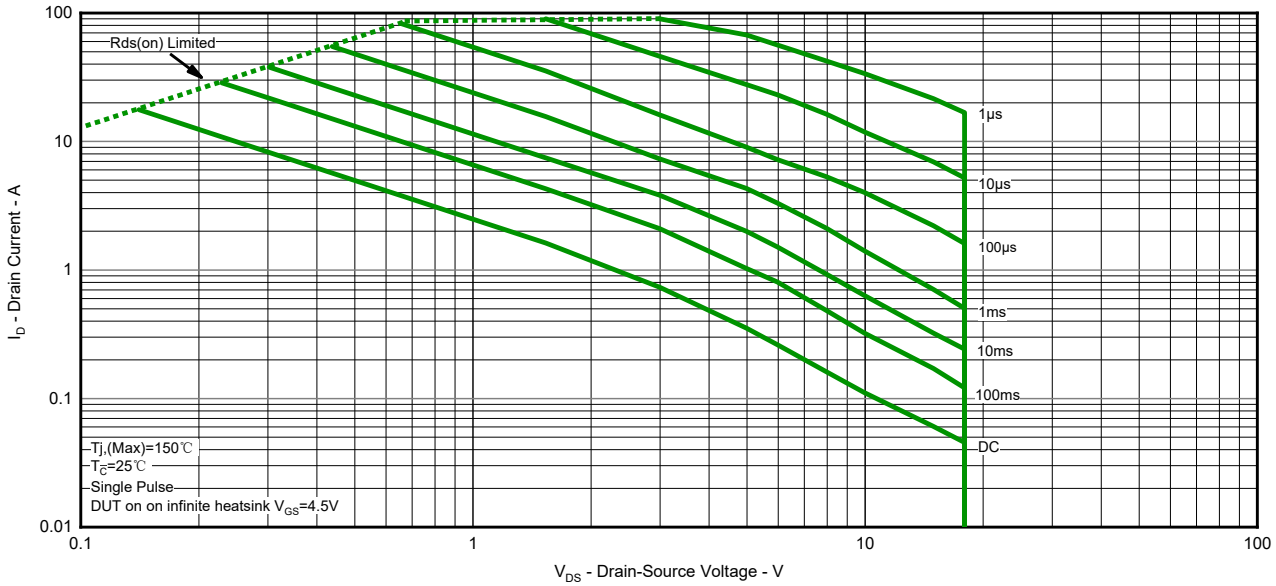


Fig.9 Safe Operation Area

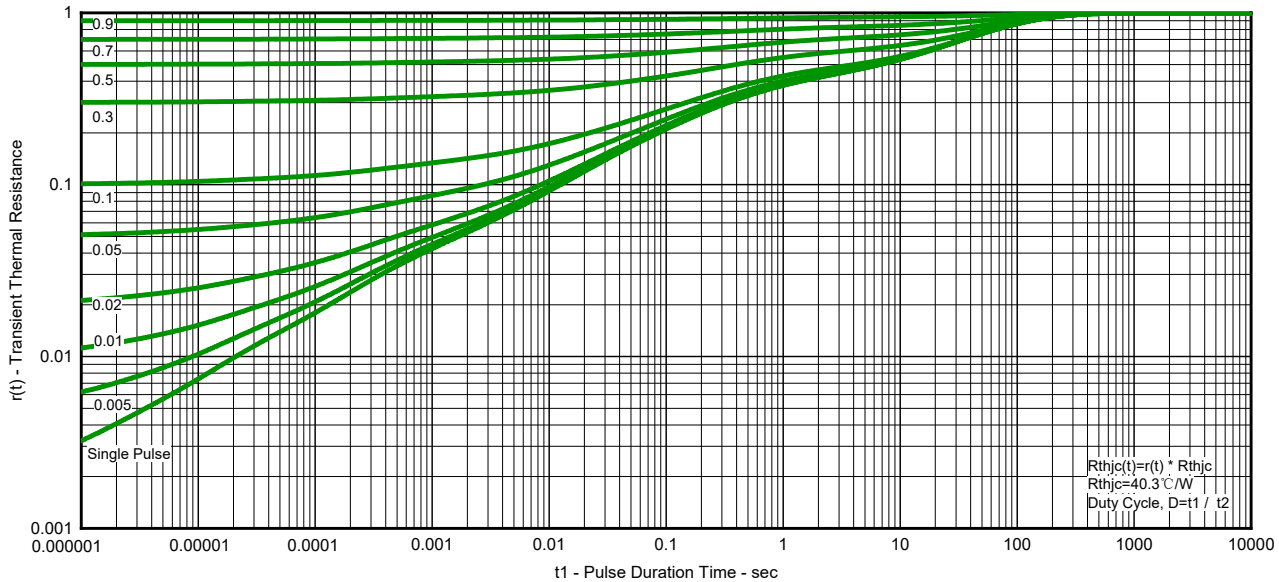
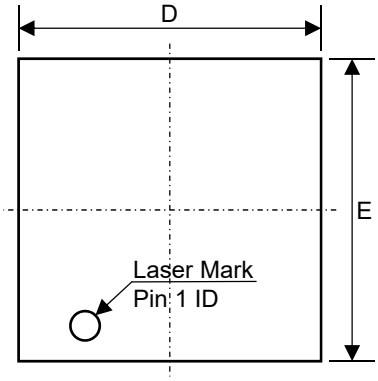
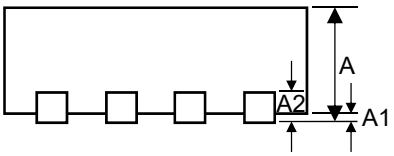


Fig.10 Transient Thermal Resistance

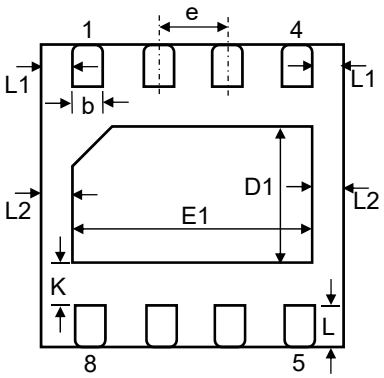
Product Dimension (DFN3030-8L)



Top View



Side View



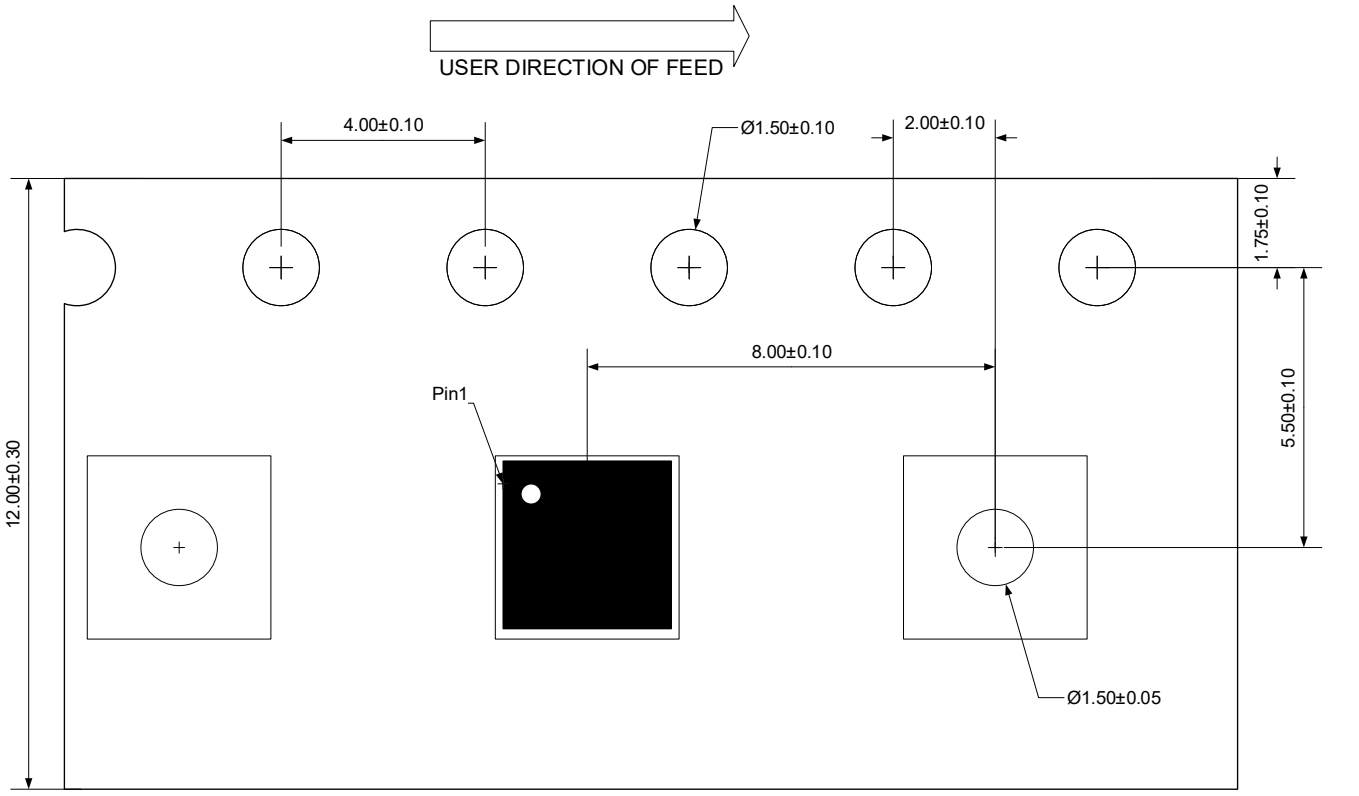
Bottom View

Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.70	0.80	0.028	0.031
A1	0.00	0.05	0.000	0.002
A2	0.203 Ref.		0.008 Ref.	
D	2.90	3.10	0.114	0.122
D1	1.40	1.60	0.055	0.063
E	2.90	3.10	0.114	0.122
E1	2.20	2.40	0.087	0.094
b	0.25	0.35	0.010	0.014
e	0.65 BSC		0.026 BSC	
L	0.30	0.50	0.012	0.020
L1	0.375 BSC		0.015 BSC	
L2	0.35 BSC		0.014 BSC	
K	0.35 Ref.		0.014 Ref.	

Ordering Information

Device	Package	Reel	Shipping
PDNM8PN18V15	DFN3030-8L	13"	5000 / Tape & Reel

Load With Information



Unit:mm

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