
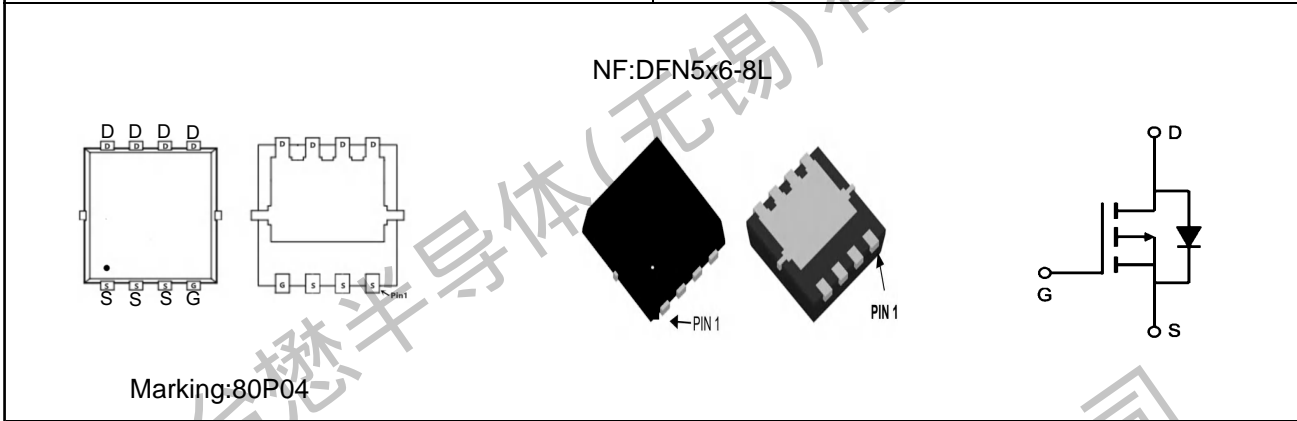




# TM80P04NF

# P-Channel Enhancement Mosfet

<p><b>General Description</b></p> <ul style="list-style-type: none"> <li>• Low <math>R_{DS(ON)}</math></li> <li>• RoHS and Halogen-Free Compliant</li> </ul> <p><b>Applications</b></p> <ul style="list-style-type: none"> <li>• Load switch</li> <li>• PWM</li> </ul>	<p><b>General Features</b></p> <p><math>V_{DS} = -40V</math> <math>I_D = -80A</math>  <math>R_{DS(ON)} = 5.0m\Omega</math> (typ.) @ <math>V_{GS} = -10V</math></p> <p>100% UIS Tested          100% <math>R_g</math> Tested</p> 
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**Absolute Maximum Ratings** ( $T_C=25^\circ C$  unless otherwise noted)

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	-40	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D@T_C=25^\circ C$	Continuous Drain Current, $-V_{GS}$ @ $-10V$	-80	A
$I_D@T_C=100^\circ C$	Continuous Drain Current, $-V_{GS}$ @ $-10V$	-50.6	A
$I_{DM}$	Pulsed Drain Current	-280	A
EAS	Single Pulse Avalanche Energy	576	mJ
$P_D@T_C=25^\circ C$	Total Power Dissipation	58	W
$T_{STG}$	Storage Temperature Range	-55 to 175	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 175	$^\circ C$

**Thermal Data**

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	---	62	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case	---	3.6	$^\circ C/W$

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Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)

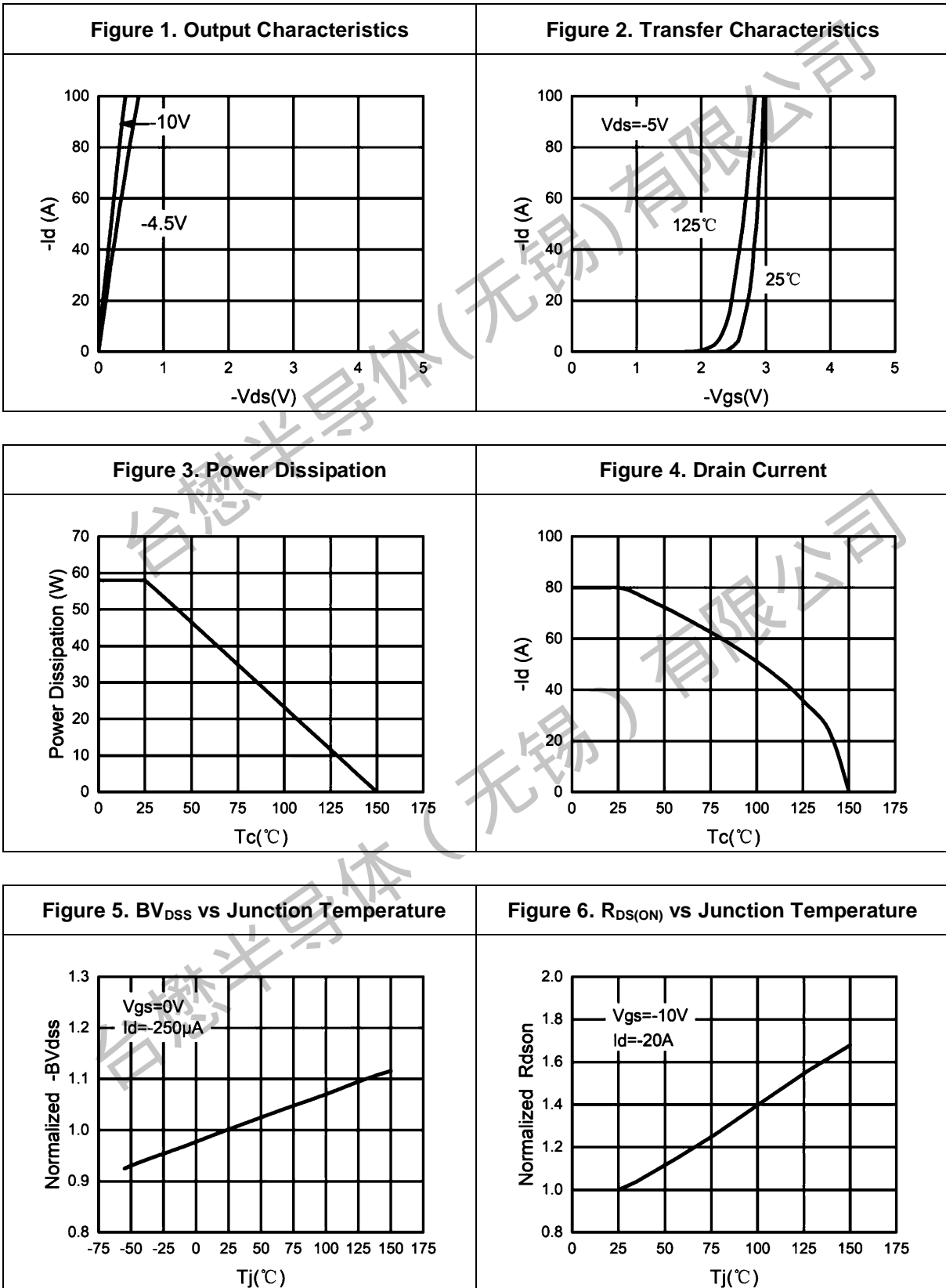
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>On/Off States</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V I <sub>D</sub> =-250μA	-40			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =-40V, V <sub>GS</sub> =0V			-1	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V			±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1.4	-1.75	-2.0	V
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =-5V, I <sub>D</sub> =-20A		63		S
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =-10V, I <sub>D</sub> =-20A		5.0	6.6	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-20A		6.8	7.6	mΩ
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V, f=1.0MHz		6638		pF
C <sub>oss</sub>	Output Capacitance			545		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			345		pF
R <sub>g</sub>	Gate resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1.0MHz		2.2		Ω
<b>Switching Parameters</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-20V, R <sub>L</sub> =1Ω, R <sub>GEN</sub> =3Ω		16		nS
t <sub>r</sub>	Turn-on Rise Time			17		nS
t <sub>d(off)</sub>	Turn-Off Delay Time			68		nS
t <sub>f</sub>	Turn-Off Fall Time			31		nS
Q <sub>g</sub>	Total Gate Charge				118	
Q <sub>gs</sub>	Gate-Source Charge	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-20V, I <sub>D</sub> =-20A		13		nC
Q <sub>gd</sub>	Gate-Drain Charge			22		nC
<b>Source-Drain Diode Characteristics</b>						
I <sub>SD</sub>	Source-Drain Current (Body Diode)				-80	A
V <sub>SD</sub>	Forward on Voltage <sup>(Note 3)</sup>	V <sub>GS</sub> =0V, I <sub>S</sub> =-20A			-1.2	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>F</sub> =-20A, di/dt=500A/μs		24		ns
Q <sub>rr</sub>	Reverse Recovery Charge	I <sub>F</sub> =-20A, di/dt=500A/μs		140		nC



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P-Channel Enhancement Mosfet

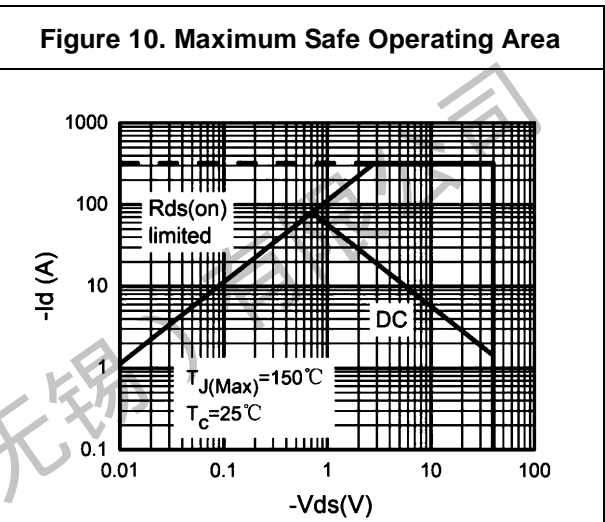
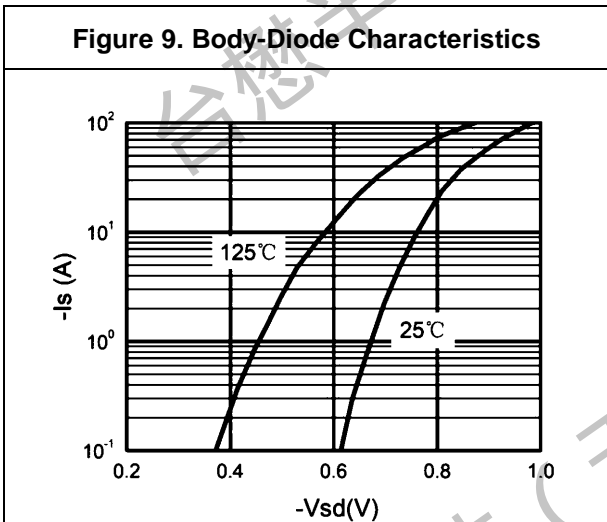
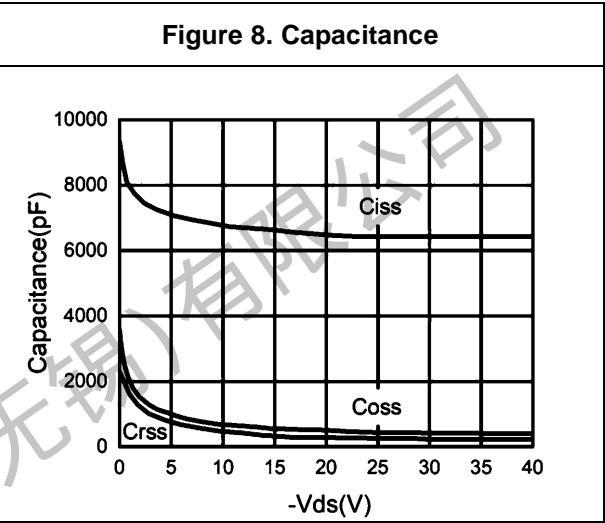
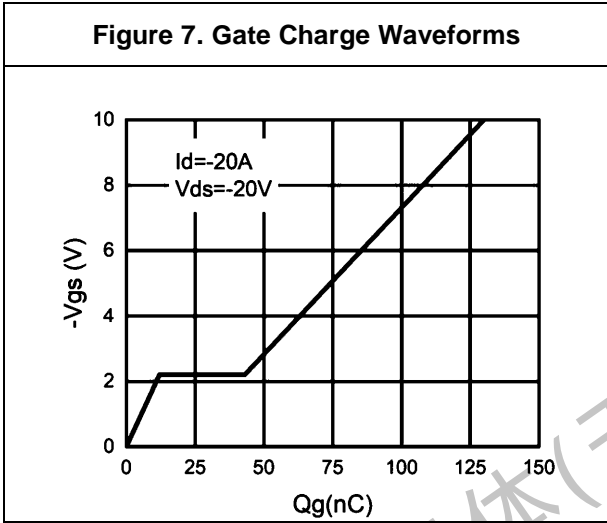
Typical Electrical And Thermal Characteristics (Curves)





# TM80P04NF

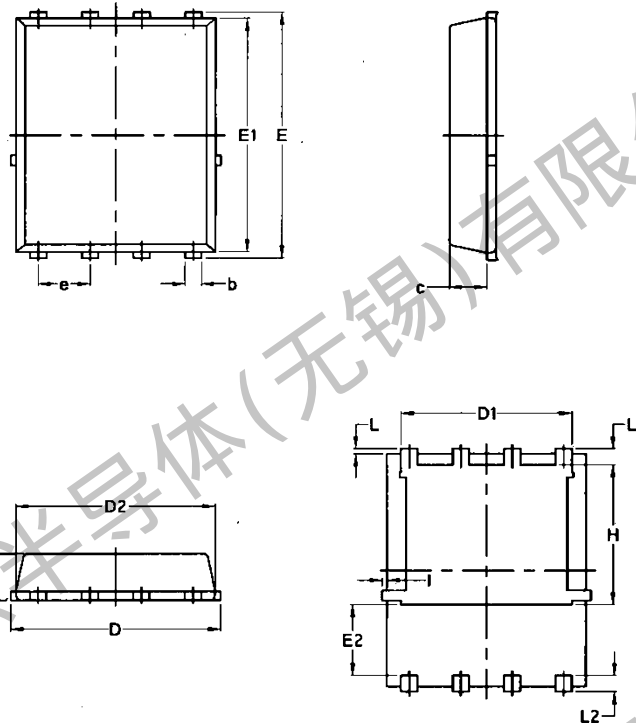
# P-Channel Enhancement Mosfet



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P-Channel Enhancement Mosfet

Package Mechanical Data:DFN5x6-8L

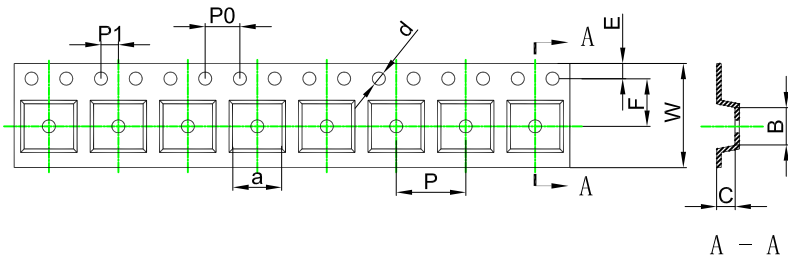


Symbol	Common			
	mm		Inch	
	Min	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070

**TM80P04NF**

**P-Channel Enhancement Mosfet**

PDFN5x6-8L Embossed Carrier Tape



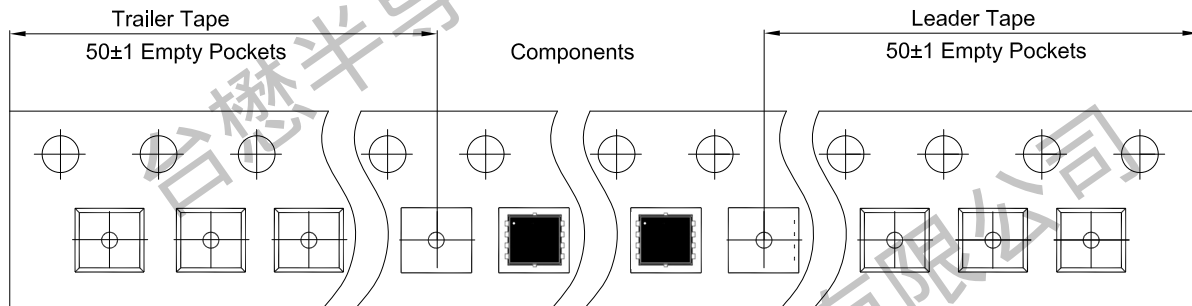
**Packaging Description:**

SOP-8L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 2,500 units per 13" or 33cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

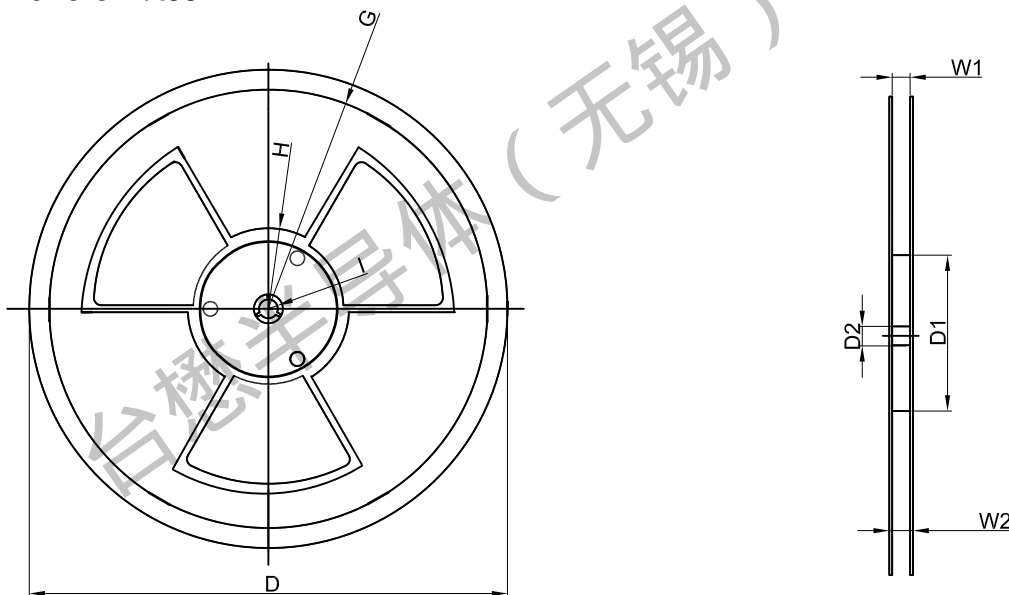
ALL DIM IN mm

Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
PDFN5x6-8L	6.40	5.40	2.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

PDFN5x6-8L Tape Leader and Trailer



PDFN5x6-8L Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
13" Dia	Ø330.00	100.00	13.00	R135.00	R55.00	R6.50	12.00	14.00

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
5,000 pcs	13 inch	10,000 pcs	370×355×52	50,000 pcs	400×360×368	

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Revision history:

Date	Rev	Description	Page
2025.1.1	25.1	Original	