TM08P04S

P-Channel Enhancement Mosfet

General Description

- Low $R_{DS(ON)}$
- RoHS and Halogen-Free Compliant

Applications

- Load switch
- PWM

General Features

V_{DS} = -40V I_D =-7.8A

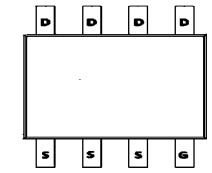
$R_{DS(ON)}$ =32 mΩ @ V_{GS}=-10V

100% UIS Tested

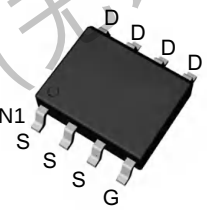
100% R_g Tested

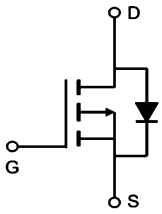
Green Product

S:SOP-8L



PIN1





Marking: 08P04

Absolute Maximum Ratings (T_A= 25°C Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-40	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_A=25°C	Continuous Drain Current, V_{GS} @ 10V	-7.8	A
I_D@T_A=70°C	Continuous Drain Current, V_{GS} @ 10V	-5.7	A
I_{DM}	Pulsed Drain Current	-30	A
EAS	Single Pulse Avalanche Energy	36	mJ
P_D@T_A=25°C	Total Power Dissipation	3.1	W
T_{STG}	Storage Temperature Range	-55 to 175	°C
T_J	Operating Junction Temperature Range	-55 to 175	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	80	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case	---	25	°C/W

Electrical Characteristics: (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	-40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=-32V, TJ=25℃	---	---	-1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	-1.4	-1.75	-2.0	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=-10V,I_D=-6A	---	32	41	mΩ
		V_{GS}=-4.5V,I_D=-3A	---	42	58	
G_{FS}	Forward Transconductance	V_{DS}=-5V, I_D=-6A	---	12	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=-15V, V_{GS}=0V, f=1MHz	---	1004	---	pF
C_{oss}	Output Capacitance		---	108	---	
C_{rss}	Reverse Transfer Capacitance		---	80	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=-15V, V_{GS}=-10V I_D=-1A,R_{GEN}=3.3Ω	---	19.2	---	ns
t_r	Rise Time		---	12.8	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	48.6	---	ns
t_f	Fall Time		---	4.6	---	ns
Q_g	Total Gate Charge	V_{DS}=-20V , V_{GS}=-4.5V , I_D=-6A	---	9	---	nC
Q_{gs}	Gate-Source Charge		---	2.54	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	3.1	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_S=-1A, T_J=25℃	---	---	-1	V
LS	Continuous Source Current	·V_G=V_D=0V , Force Current	---	---	-7.8	
LSM	Pulsed Source Current		---	---	-15	

Typical Characteristics: (T_C=25℃ unless otherwise noted)

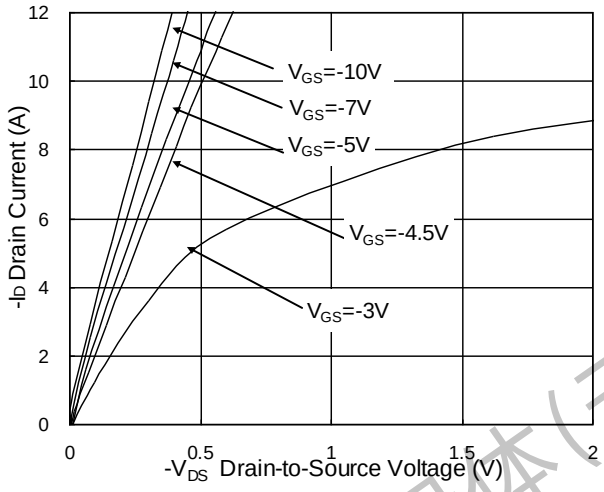


Fig.1 Typical Output Characteristics

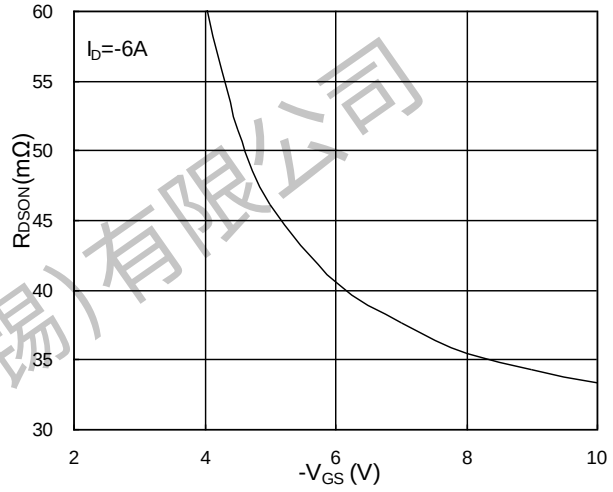


Fig.2 On-Resistance v.s Gate-Source

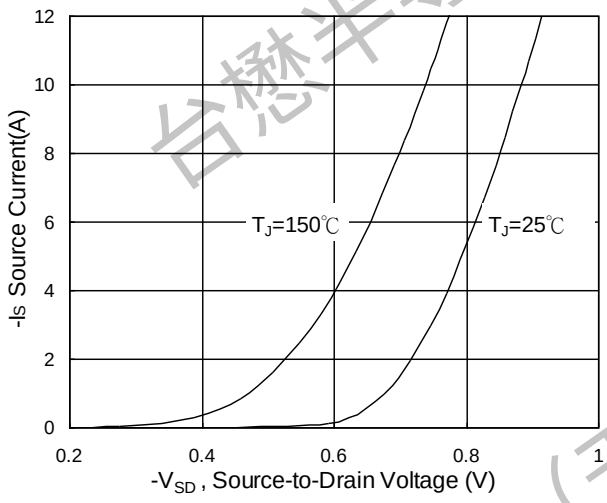


Fig.3 Forward Characteristics of Reverse

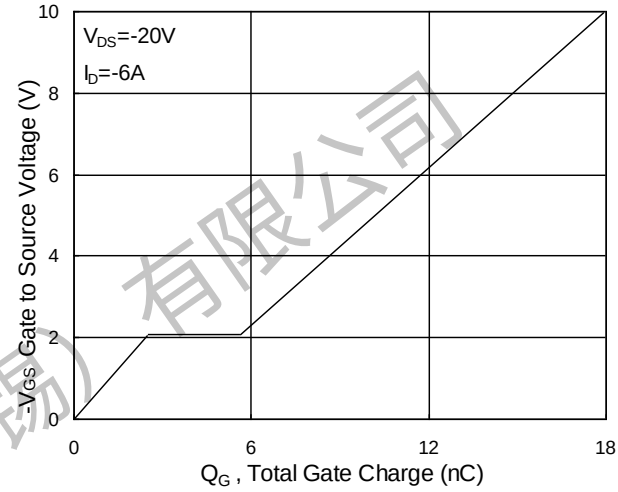


Fig.4 Gate-Charge Characteristics

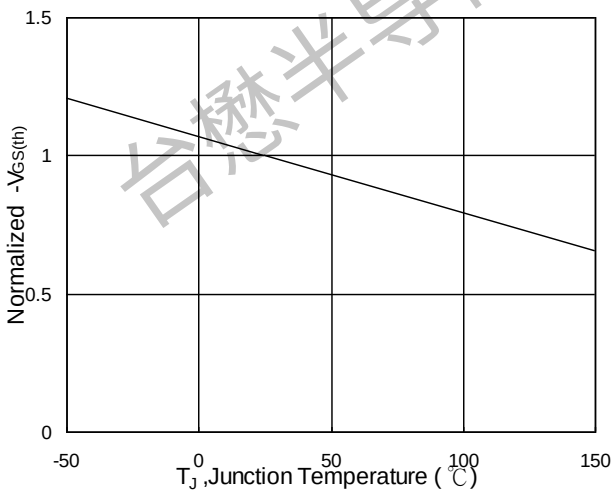


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

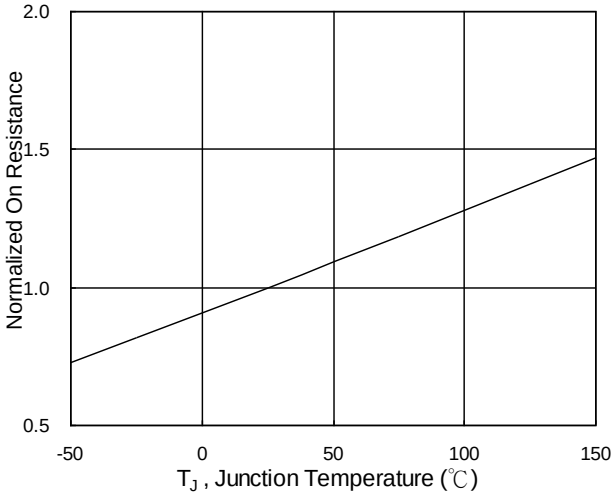


Fig.6 Normalized R_{DSON} v.s T_J

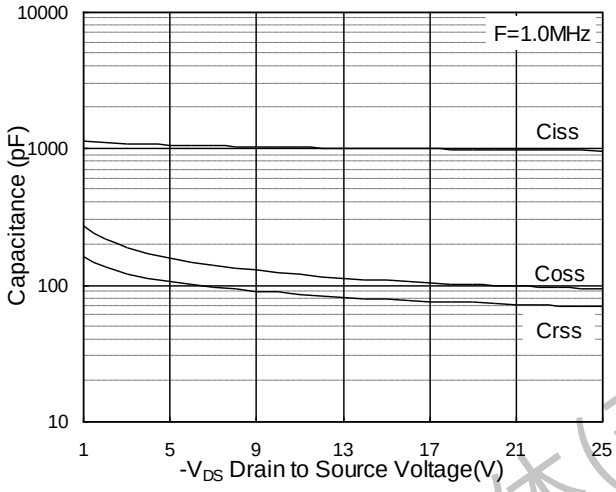


Fig.7 Capacitance

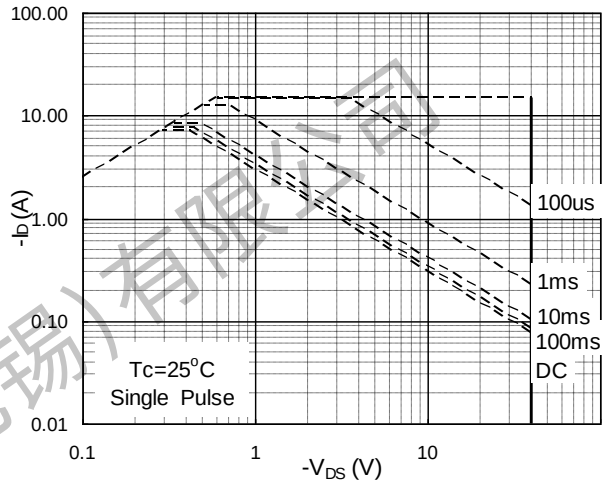


Fig.8 Safe Operating Area

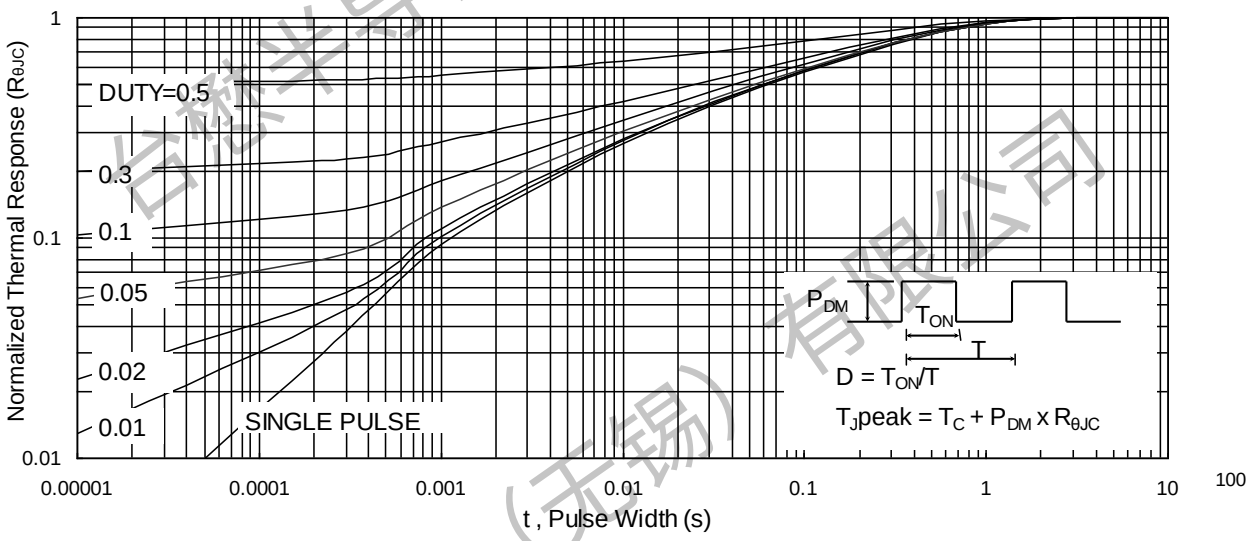


Fig.9 Normalized Maximum Transient Thermal Impedance

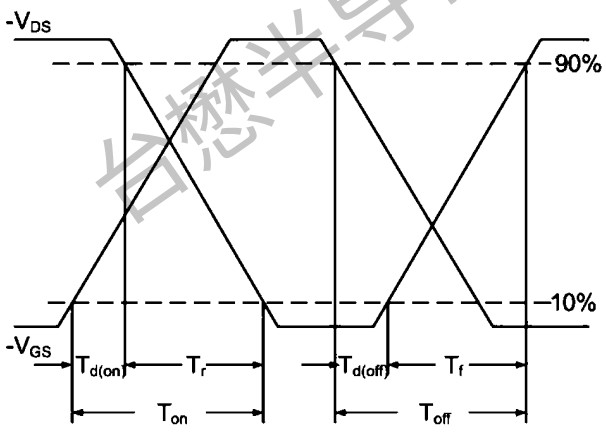


Fig.10 Switching Time Waveform

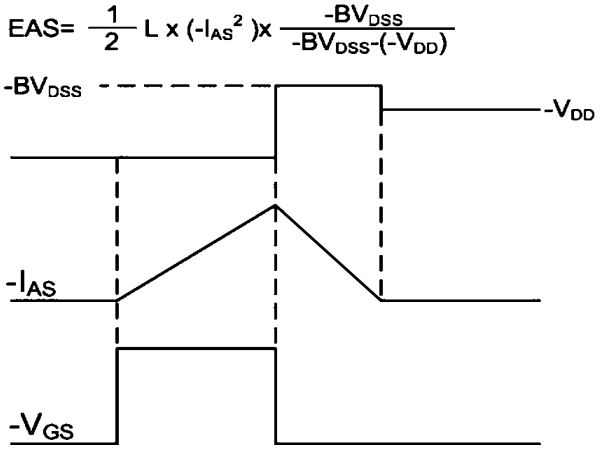
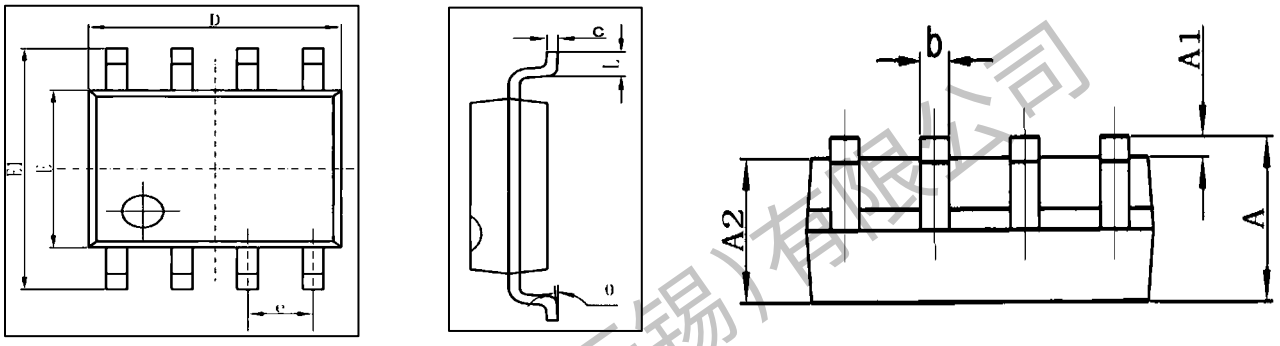
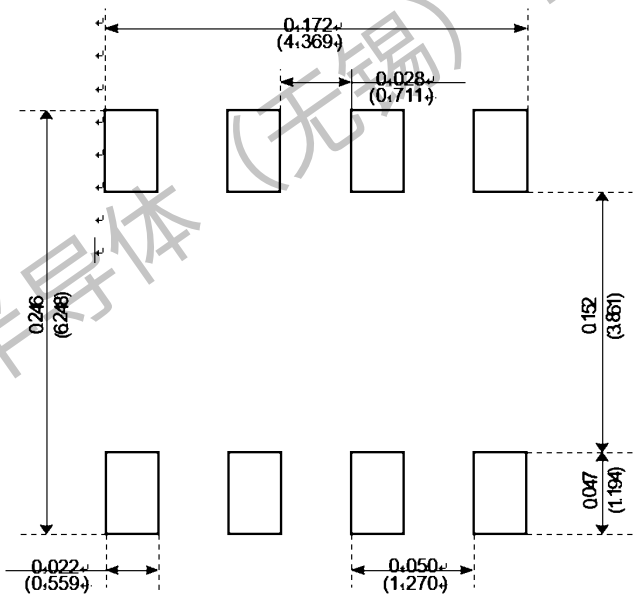


Fig.11 Unclamped Inductive Waveform

Package Mechanical Data:SOP-8L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

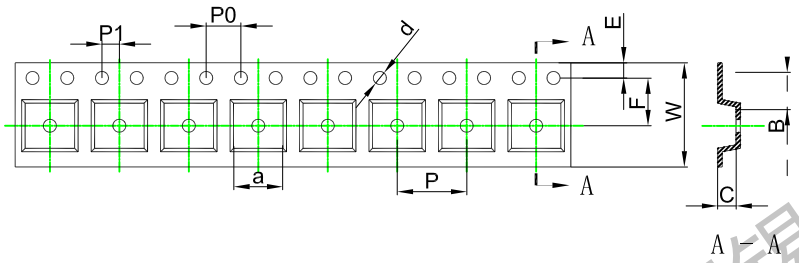


Recommended Minimum Pads

TM08P04S

P-Channel Enhancement Mosfet

SOP-8L Embossed Carrier Tape



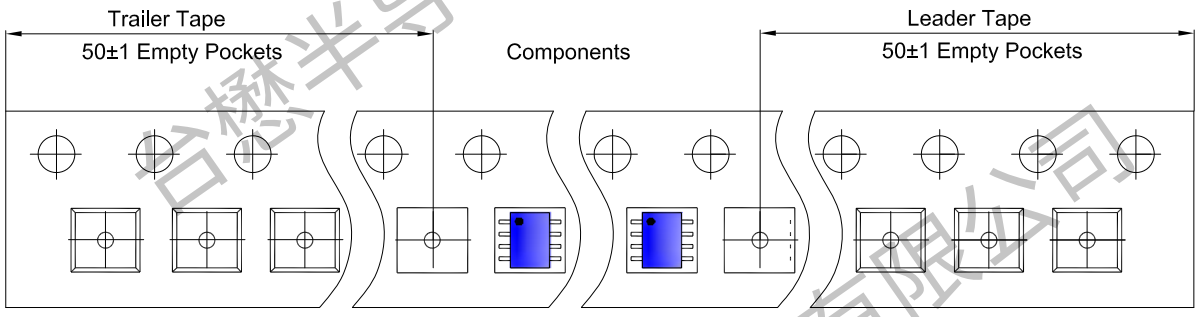
Packaging Description:

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).

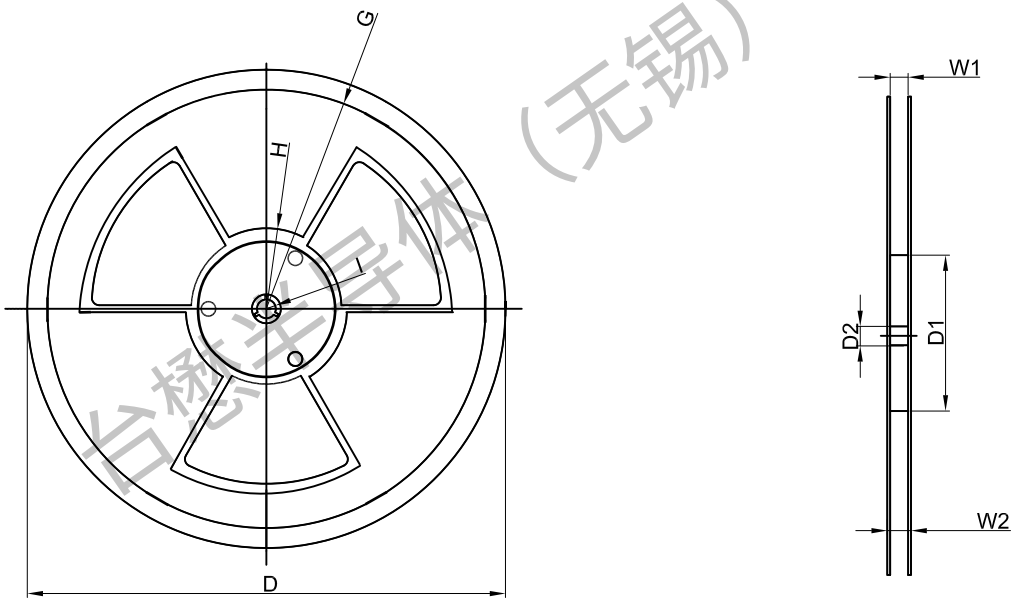
ALL DIM IN mm

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

SOP-8L Tape Leader and Trailer



SOP-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)
3,000 pcs	13 inch	6,000 pcs	370×355×52	48,000 pcs	400×360×368	

Important Notices and Disclaimers

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Revision history:

Date	Rev	Description	Page
2024.05.13	24.05	Original	