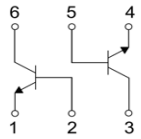
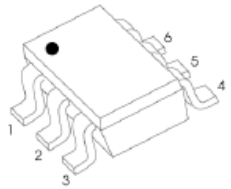
MARKING:K6N

FEATURES

Epitaxial planar die construction
Ideal for low power amplification and switching





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MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current -Continuous	0.2	A
P_C	Collector Power Dissipation	0.2	W
T_J	Junction Temperature	150	℃
T_{stg}	Storage Temperature	-55-150	℃

ELECTRICAL CHARACTERISTICS (Ta=25℃ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=10μA,I_E=0	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=1mA,I_B=0	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=10μA,I_C=0	5			V
Collector cut-off current	I_{CBO}	V_{CB}=30V,I_E=0			0.05	μA
Emitter cut-off current	I_{EBO}	V_{EB}=5V,I_C=0			0.05	μA
Collector cut-off current	I_{CEX}	V_{CE}=30V,$V_{BE(off)}$= -3V			0.05	μA
DC current gain	$h_{FE(1)}$	V_{CE}=1V,I_C=1mA	70			
	$h_{FE(2)}$	V_{CE}=1V,I_C=10mA	100		300	
	$h_{FE(3)}$	V_{CE}=1V,I_C=50mA	60			
	$h_{FE(4)}$	V_{CE}=1V,I_C=100mA	30			
Collector-emitter saturation voltage	$V_{CE(sat)1}$	I_C=10mA,I_B=1mA			0.2	V
	$V_{CE(sat)2}$	I_C=50mA,I_B=5mA			0.3	V
Base-emitter saturation voltage	$V_{BE(sat)1}$	I_C=10mA,I_B=1mA	0.65		0.85	V
	$V_{BE(sat)2}$	I_C=50mA,I_B=5mA			0.95	V
Transition frequency	f_T	V_{CE}=20V,I_C=10mA,f=100MHz	300			MHz
Collector output capacitance	C_{ob}	V_{CB}=5V,I_E=0,f=1MHz			4	pF
Noise figure	NF	V_{CE}=5V,I_c=0.1mA,f=1kHz,R_S=1KΩ			5	dB
Delay time	t_d	V_{CC}=3V, $V_{BE(off)}$=-0.5V I_C=10mA , I_{B1}=-I_{B2}= 1mA			35	nS
Rise time	t_r				35	nS
Storage time	t_s	V_{CC}=3V, I_C=10mA I_{B1}=-I_{B2}=1mA			200	nS
Fall time	t_f				50	nS

RATING AND CHARACTERISTIC CURVES

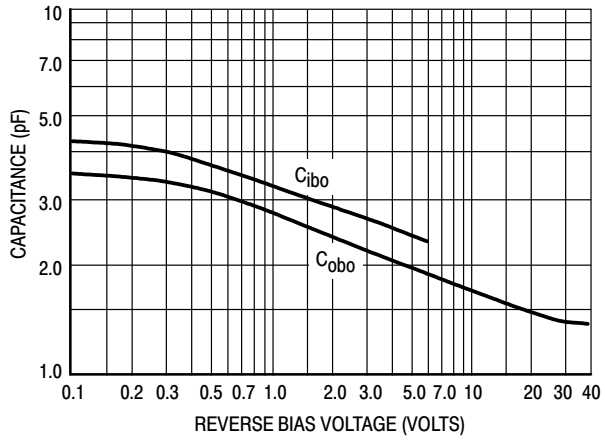


Figure 1. Capacitance

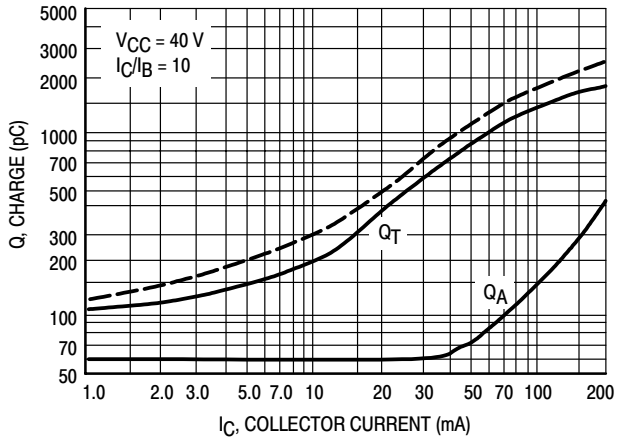


Figure 2. Charge Data

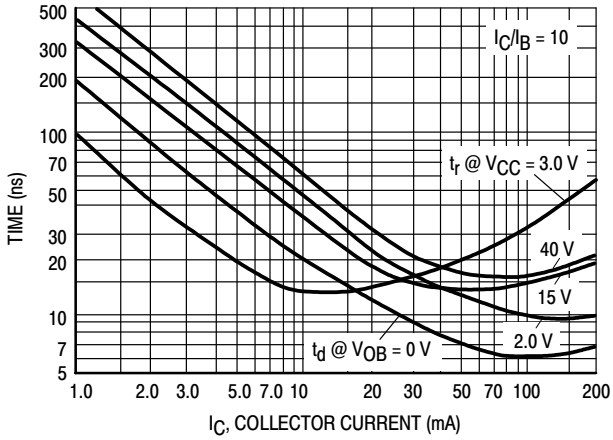


Figure 3. Turn–On Time

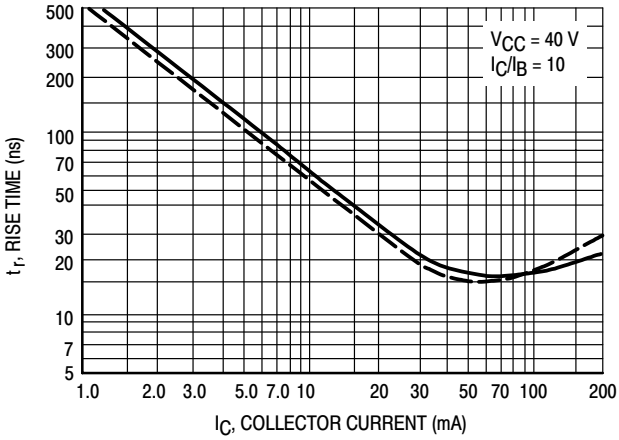


Figure 4. Rise Time

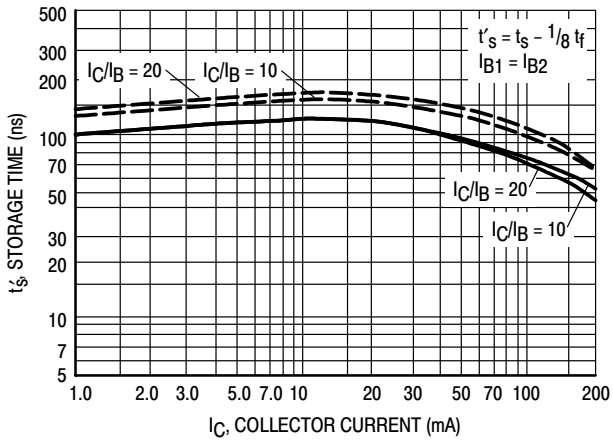


Figure 5. Storage Time

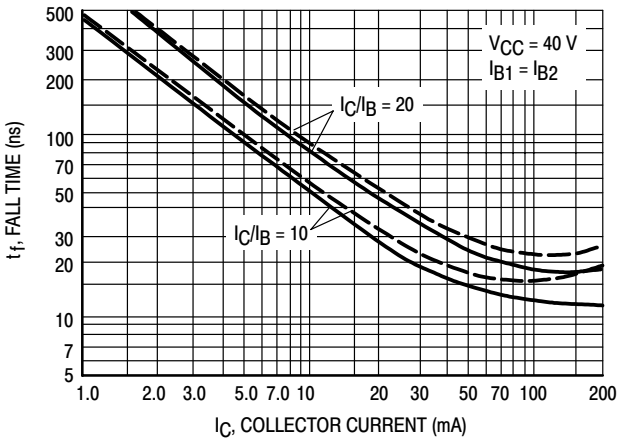


Figure 6. Fall Time

RATING AND CHARACTERISTIC CURVES

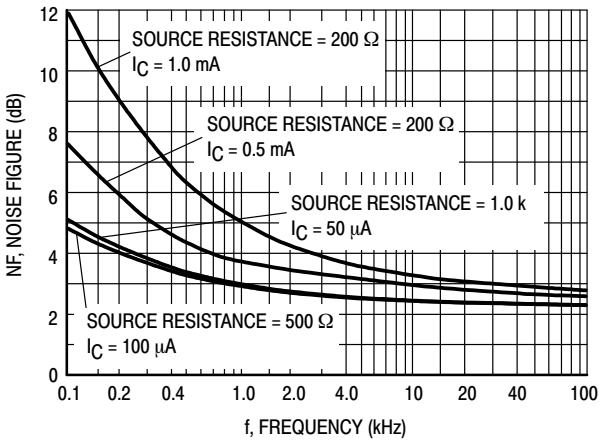


Figure 7. Noise Figure

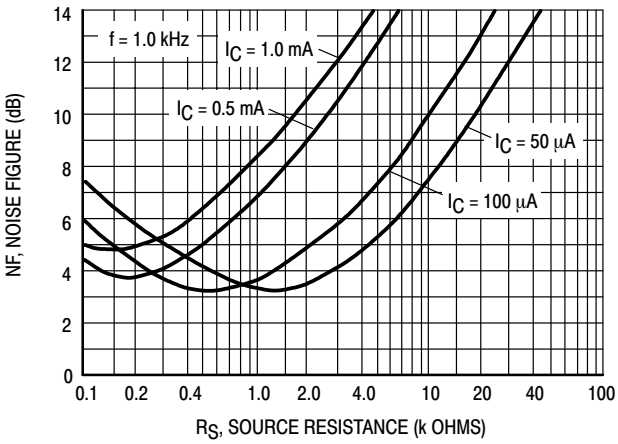


Figure 8. Noise Figure

h PARAMETERS

(V_{CE} = 10 Vdc, f = 1.0 kHz, T_A = 25°C)

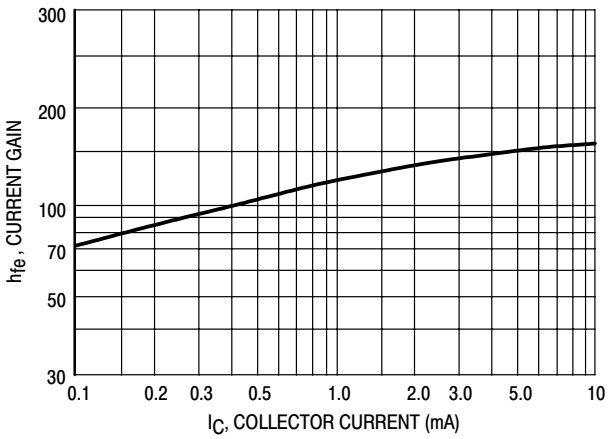


Figure 9. Current Gain

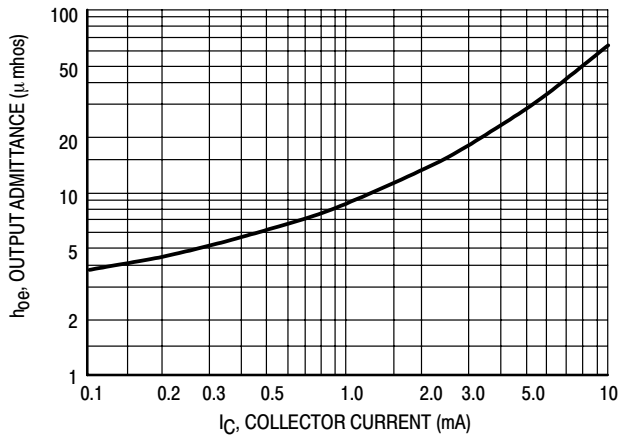


Figure 10. Output Admittance

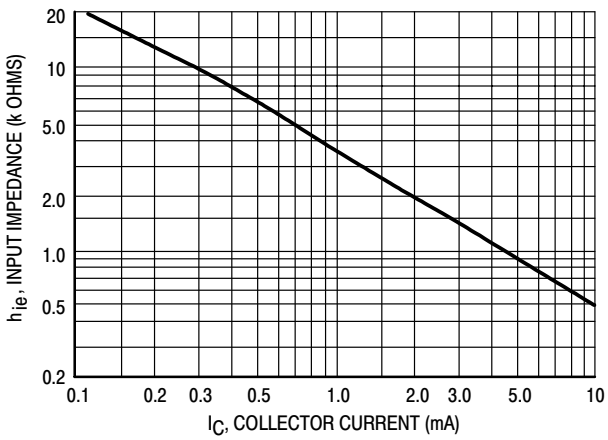


Figure 11. Input Impedance

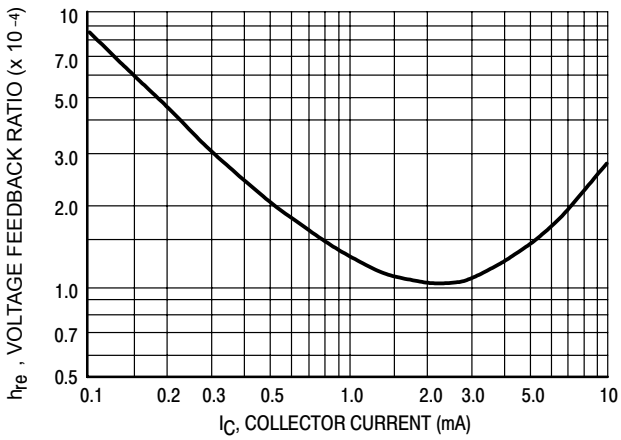


Figure 12. Voltage Feedback Ratio

RATING AND CHARACTERISTIC CURVES

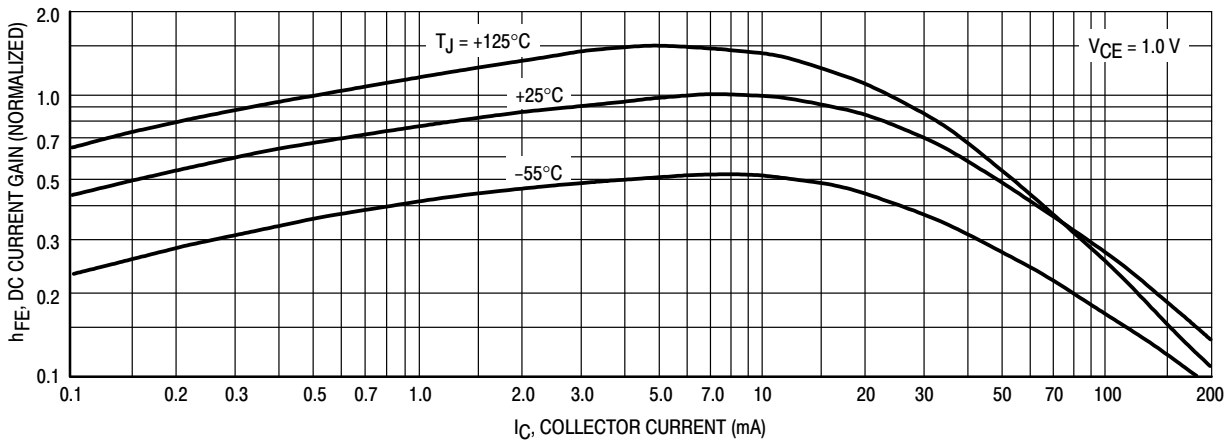


Figure 13. DC Current Gain

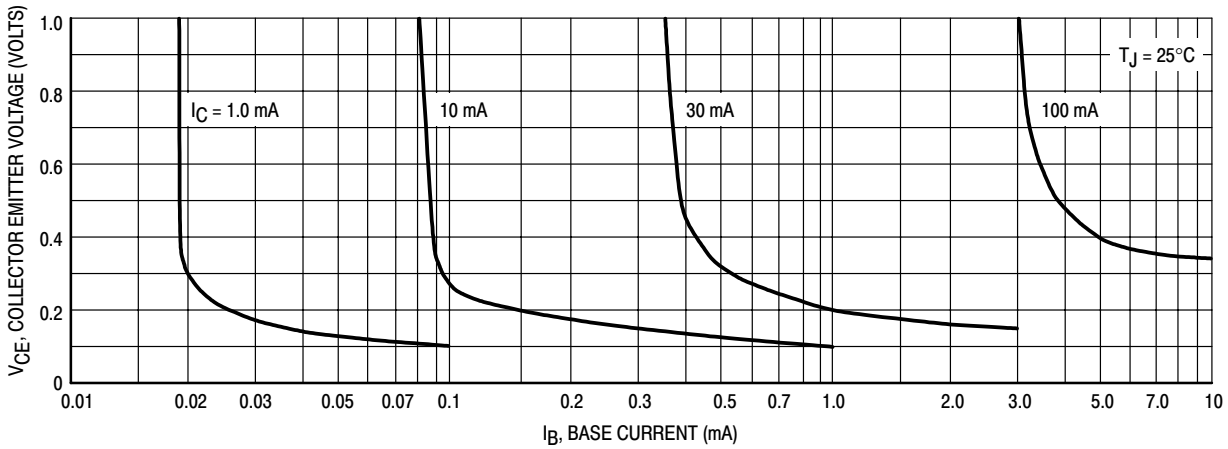


Figure 14. Collector Saturation Region

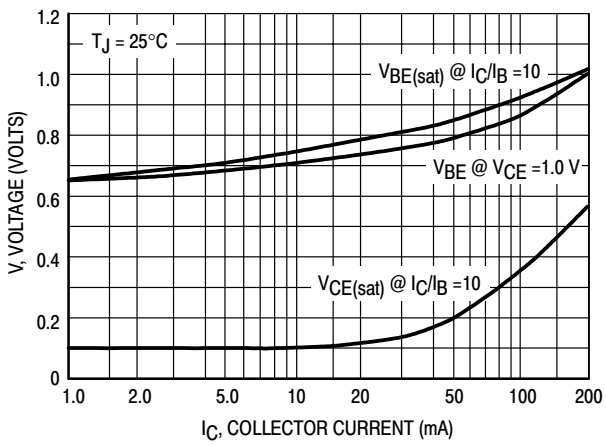


Figure 15. "ON" Voltages

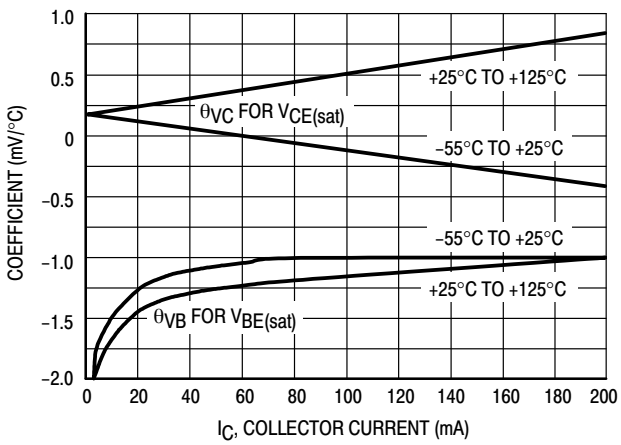
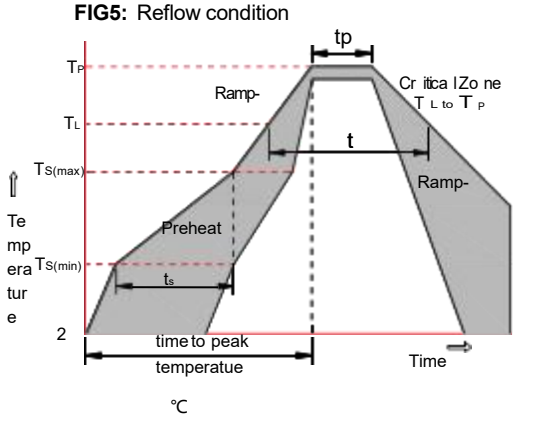


Figure 16. Temperature Coefficients

Soldering parameters

Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃

FIG5: Reflow condition



Package Dimensions & Suggested Pad Layout

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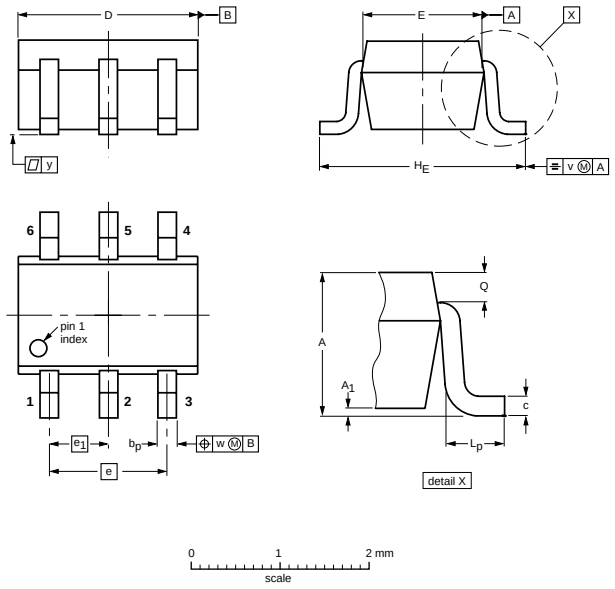
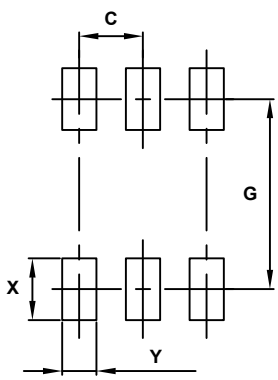




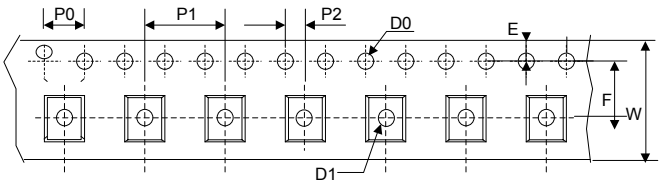
Dimensions	Value (in mm)
C	0.65
G	1.90
X	0.85
Y	0.40

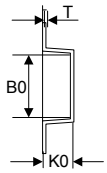
DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w	y
mm	1.1 0.8	0.1	0.30 0.20	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.25 0.15	0.2	0.2	0.1

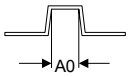
Tape & rell specification

Tape





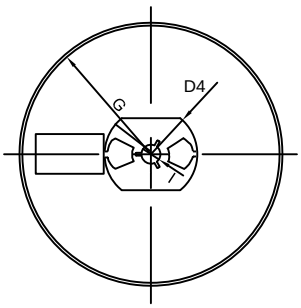
SECTION : B-B

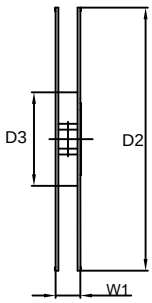


SECTION : A-A

Symbol	Dimension (mm)
P0	4.00±0.20
P1	4.00±0.20
P2	2.00±0.20
D0	1.55±0.20
D1	1.00±0.20
E	1.55±0.25
F	3.60±0.20
W	8.00±0.20
A0	3.00±0.20
B0	3.00±0.20
K0	1.30±0.20
T	0.20±0.20

7” Reel





D2	177.0±5.0
D3	55Min.
D4	R24.6±2.0
G	R82.0±2.0
I	13.0±2.0
W1	10.20±3.0
Quantity: 3000PCS	