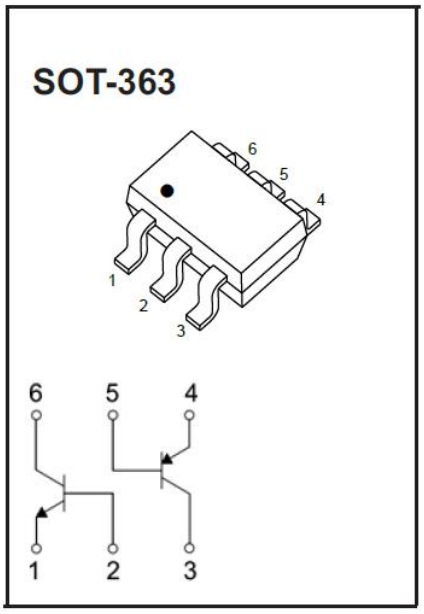
JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

AD-MMDT5451 Plastic-Encapsulated Transistors

AD-MMDT5451 Dual transistor (NPN+PNP)



FEATURES

- Epitaxial planar die construction
- Ideal for low power amplification and switching
- One 5551(NPN), one 5401(PNP)
- AEC-Q101 qualified

MARKING

K̄NM

MAXIMUM RATINGS (T_j = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-base voltage	V_{CBO}	180	V
Collector-emitter voltage	V_{CEO}	160	V
Emitter-base voltage	V_{EBO}	6	V
Collector current -continuous	I_C	0.2	A
Collector power dissipation	P_C	0.2	W
Thermal resistance junction to ambient	$R_{\theta JA}$	625	℃/W
Operating junction and storage temperature range	T_j, T_{stg}	-55 ~ 150	°C

ELECTRICAL CHARACTERISTICS (T_j = 25°C unless otherwise specified)

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C = 100μA, I_E = 0A	180	-	-	V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0A	160	-	-	
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E = 10μA, I_C = 0A	6	-	-	
Collector cut-off current	I_{CBO}	V_{CB} = 120V, I_E = 0A	-	-	0.05	μA
Base cut-off current	I_{EBO}	V_{EB} = 4V, I_C = 0A	-	-	0.05	μA
DC current gain	$H_{FE(1)}$	V_{CE} = 5V, I_C = 1mA	80	-	-	-
	$H_{FE(2)}$	V_{CE} = 5V, I_C = 10mA	100	-	300	-
	$H_{FE(3)}$	V_{CE} = 5V, I_C = 50mA	30	-	-	-
Collector-emitter saturation voltage	$V_{CE(sat)1}$	I_C = 10mA, I_B = 1mA	-	-	0.15	V
	$V_{CE(sat)2}$	I_C = 50mA, I_B = 5mA	-	-	0.2	V
Base-emitter saturation voltage	$V_{BE(sat)1}$	I_C = 10mA, I_B = 1mA	-	-	1	V
	$V_{BE(sat)2}$	I_C = 50mA, I_B = 5mA	-	-	1	V
Transition frequency	F_t	V_{CE} = 10V, I_C = 10mA, f = 100MHz	100	-	300	MHz
Collector output capacitance	C_{ob}	V_{CB} = 10V,I_E = 0, f = 1MHz	-	-	6.0	pF
Noise figure	NF	V_{CE} = 5V, I_c = 200μA, f = 1KHz, R_g = 1KΩ	-	-	8.0	dB

MAXIMUM RATINGS (T_j = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-base voltage	V_{CBO}	-160	V
Collector-emitter voltage	V_{CEO}	-150	V
Emitter-base voltage	V_{EBO}	-5	V
Collector current	I_C	-0.2	A
Collector power dissipation	P_C	0.2	W
Thermal resistance from junction to ambient	$R_{\theta JA}$	625	℃/W
Operating junction and storage temperature range	T_j, T_{stg}	-55 ~ 150	°C

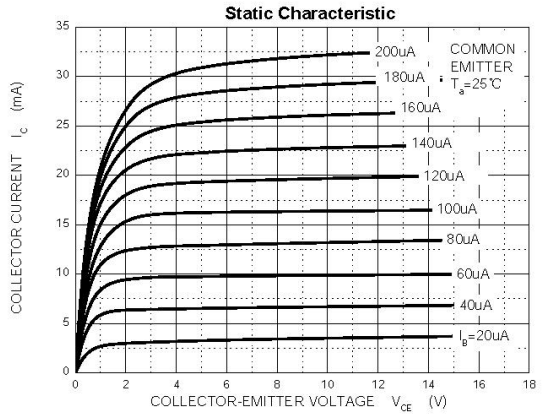
ELECTRICAL CHARACTERISTICS (T_j = 25°C unless otherwise specified)

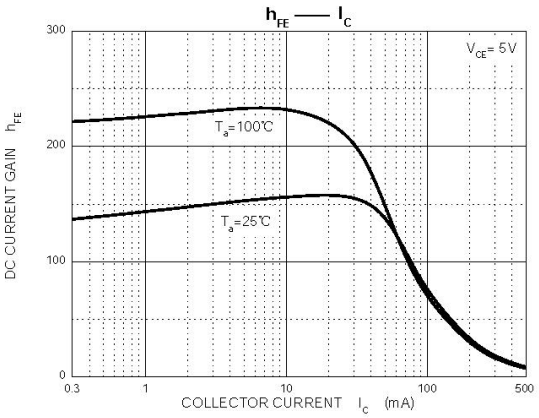
Parameter	Symbol	Test condition	Min	Typ	Max	Unit

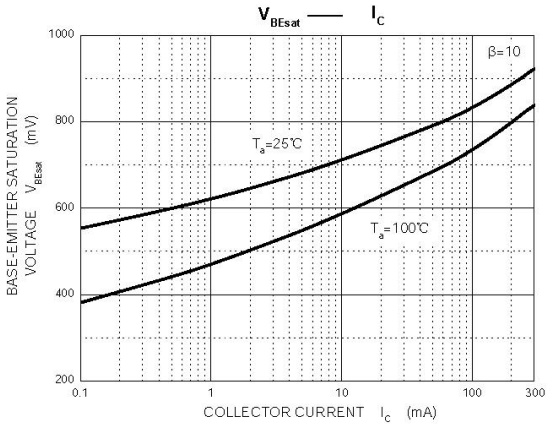
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C = -100μA, I_E = 0A	-160	-	-	V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C = -1mA, I_B = 0A	-150	-	-	V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E = -10μA, I_C = 0A	-5	-	-	V
Collector-base cut-off current	I_{CBO}	V_{CE} = -120V, I_E = 0A	-	-	-0.05	μA
Collector cut-off current	I_{EBO}	V_{EB} = -3V, I_C = 0A	-	-	-0.05	μA
DC current gain	$h_{FE(1)}$	V_{CE} = -5V, I_C = -1mA	50	-	-	-
	$h_{FE(2)}$	V_{CE} = -5V, I_C = -10mA	100	-	300	-
	$h_{FE(3)}$	V_{CE} = -5V, I_C = -50mA	50	-	-	-
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = -10mA, I_B = -1mA	-	-	-0.2	V
		I_C = -50mA, I_B = -5mA	-	-	-0.5	
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C = -10mA, I_B = -1mA	-	-	-1	
		I_C = -50mA, I_B = -5mA	-	-	-1	
Noise figure	NF	V_{CE} = -5V, I_C = -0.2mA, f = 10Hz to 15.7KHZ, R_S = 10Ω	-	-	8	dB
Transition frequency	f_T	V_{CE} = -10V, I_C = -10mA, f = 100MHz	100	-	300	MHz
Collector output capacitance	C_{ob}	V_{CB} = -10V, I_E = 0A, f = 1MHz	-	-	6	pF

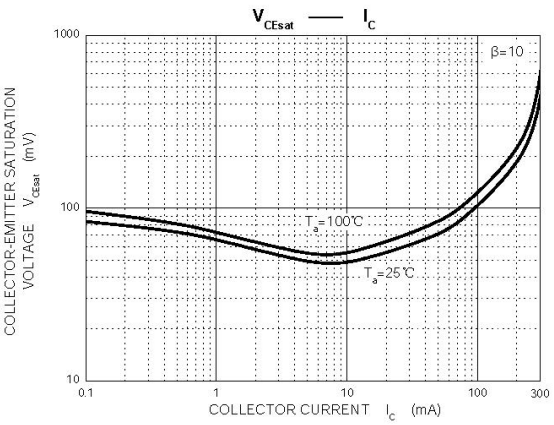
TYPICAL CHARACTERISTICS

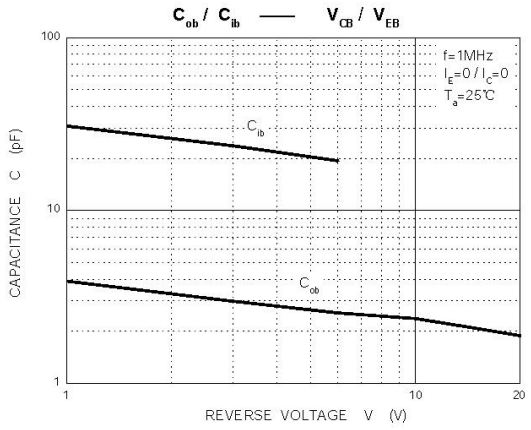
NPN

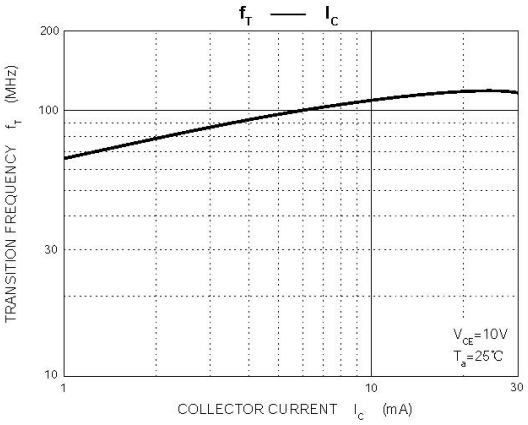


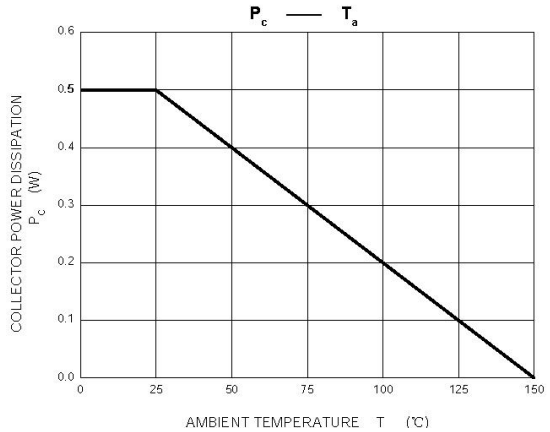




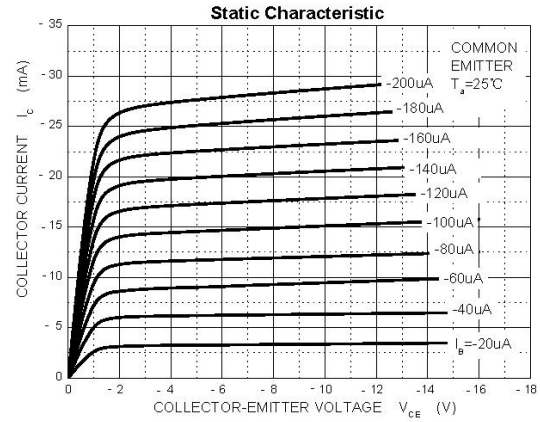


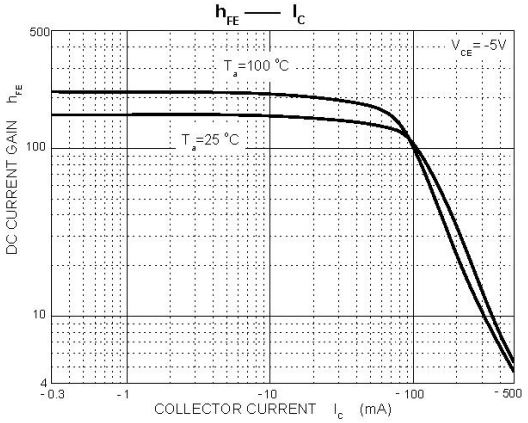


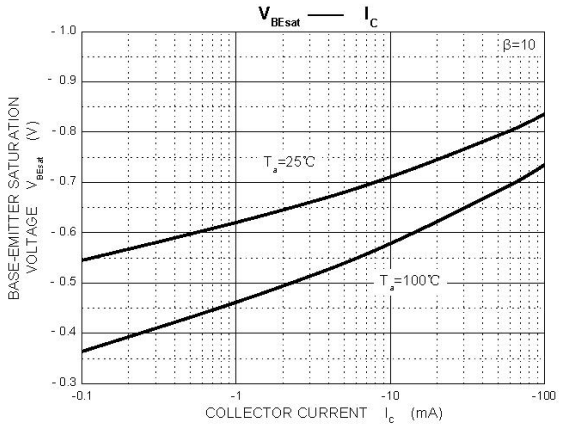


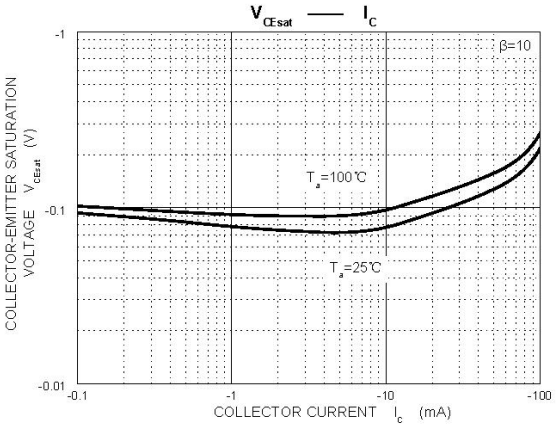


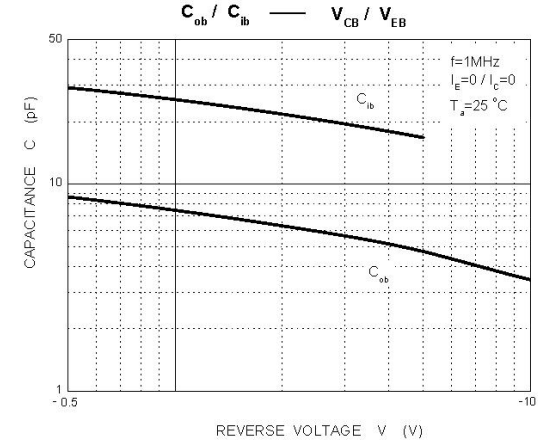
PNP

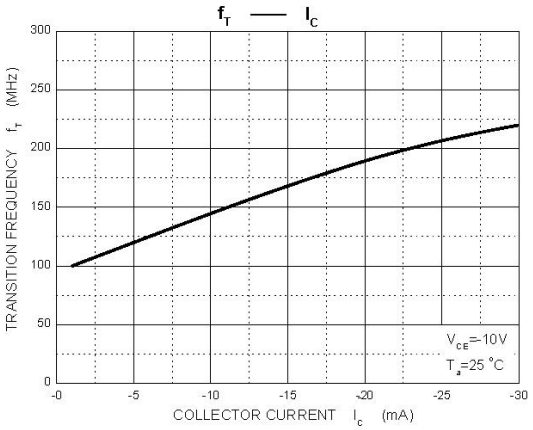

Static Characteristic
COMMON EMITTER
T_a=25℃
-200uA
-180uA
-160uA
-140uA
-120uA
-100uA
-80uA
-60uA
-40uA
I_B=-20uA
COLLECTOR CURRENT I_C (mA)
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)

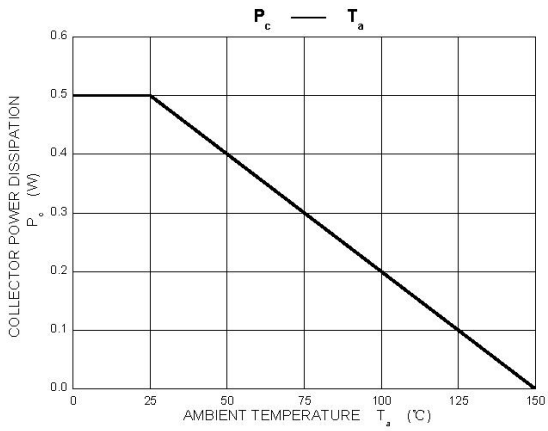

h_{FE} —— I_C
V_{CE}= -5V
T_a=100 ℃
T_a=25 ℃
DC CURRENT GAIN h_{FE}
COLLECTOR CURRENT I_C (mA)


V_{BEsat} —— I_C
β=10
T_a=25℃
T_a=100℃
BASE-EMITTER SATURATION VOLTAGE V_{BEsat} (V)
COLLECTOR CURRENT I_C (mA)

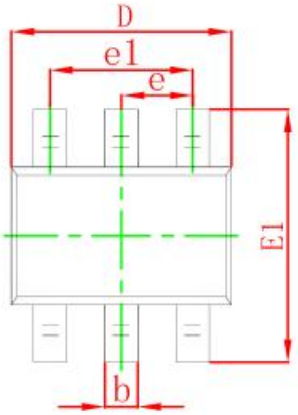

V_{CEsat} —— I_C
β=10
T_a=100℃
T_a=25℃
COLLECTOR-EMITTER SATURATION VOLTAGE V_{CEsat} (V)
COLLECTOR CURRENT I_C (mA)

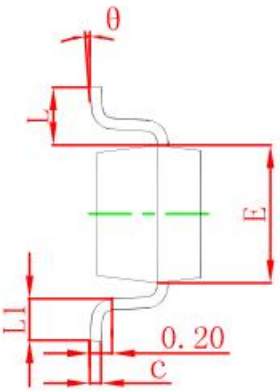

C_{ob} / C_{ib} —— V_{CB} / V_{EB}
f=1MHz
I_E=0 / I_C=0
T_a=25 ℃
C_{ib}
C_{ob}
CAPACITANCE C (pF)
REVERSE VOLTAGE V (V)

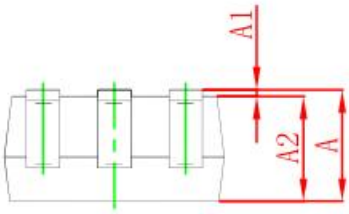

f_T —— I_C
V_{CE}=-10V
T_a=25 ℃
TRANSITION FREQUENCY f_T (MHz)
COLLECTOR CURRENT I_C (mA)


P_C —— T_a
COLLECTOR POWER DISSIPATION P_C (W)
AMBIENT TEMPERATURE T_a (℃)

SOT-363 PACKAGE OUTLINE DIMENSIONS

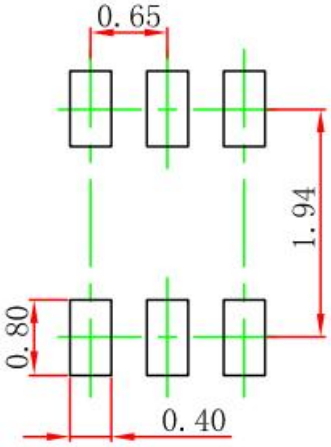






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.100	0.150	0.004	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.400	0.085	0.094
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

SOT-363 SUGGESTED PAD LAYOUT

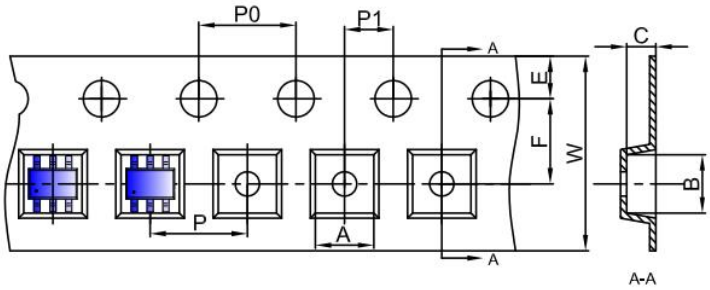


Note:

1. Controlling dimension in millimeters.
2. General tolerance: ±0.05mm.
3. The pad layout is for reference purpose only.

SOT-363 TAPE AND REEL

SOT-363 Embossed Carrier Tape

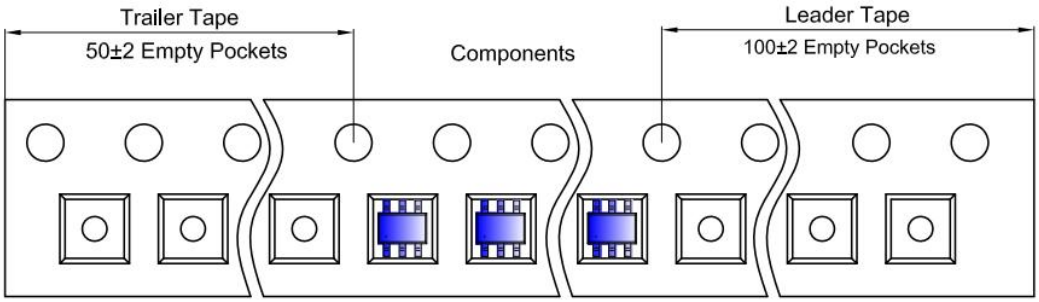


Packaging Description:

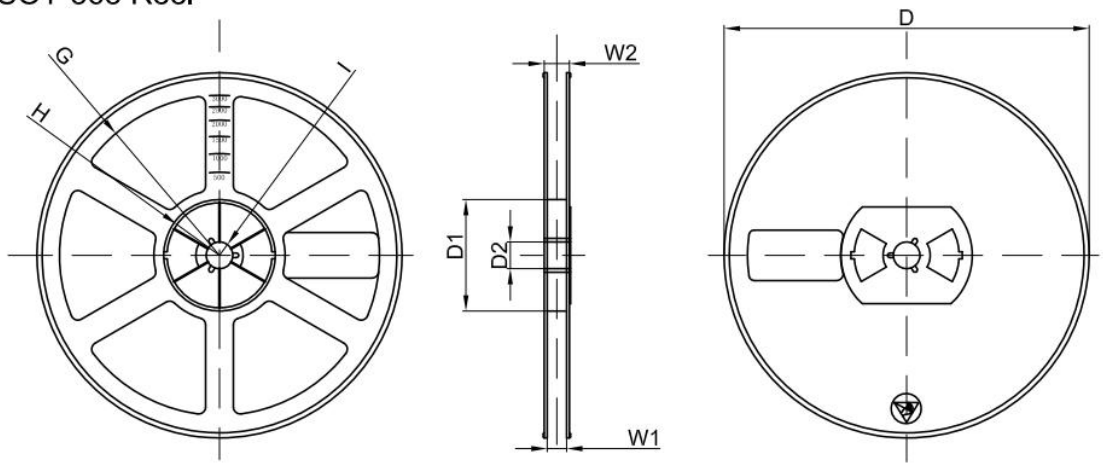
SOT-363 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-363	2.25	2.55	1.20	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-363 Tape Leader and Trailer



SOT-363 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	

PUBLISHED BY

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