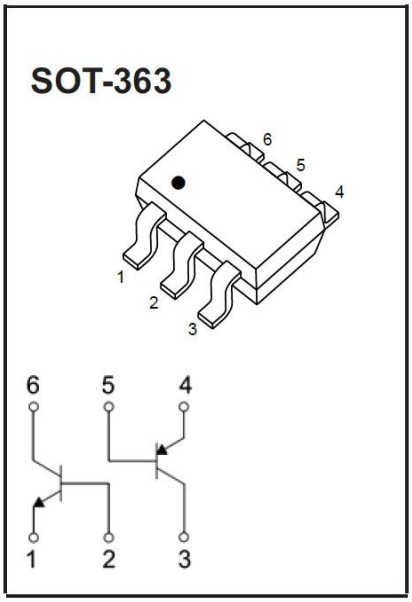
JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

AD-MMDT3946 Plastic-Encapsulated Transistors

AD-MMDT3946 Dual transistor (NPN+PNP)



FEATURES

- Complementary pair
- One 3904-Type NPN
- One 3906-Type PNP
- Epitaxial planar die construction
- Ideal for low power amplification and switching
- AEC-Q101 qualified

MARKING

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

Parameter	Symbol	Value	Unit
Collector-base voltage	V_{CBO}	60	V
Collector-emitter voltage	V_{CEO}	40	V
Emitter-base voltage	V_{EBO}	5	V
Collector current -continuous	I_C	0.2	A
Collector power dissipation	P_C	0.2	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 = 10μA, I_E = 0A	60	-	-	V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0A	40	-	-	
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E = 10μA, I_C = 0A	5	-	-	
Collector cut-off current	I_{CBO}	V_{CB} = 30V, I_E = 0A	-	-	0.05	μA
Collector cut-off current	I_{CEO}	V_{EB} = 30V, I_B = 0A	-	-	0.5	
Emitter cut-off current	I_{EBO}	V_{EB} = 5V, I_C = 0A	-	-	0.05	
DC current gain	$H_{FE(1)}$	V_{CE} = 1V, I_C = 0.1mA	40	-	-	-
	$H_{FE(2)}$	V_{CE} = 1V, I_C = 1mA	70	-	-	-
	$H_{FE(3)}$	V_{CE} = 1V, I_C = 10mA	100	-	300	-
	$H_{FE(4)}$	V_{CE} = 1V, I_C = 50mA	60	-	-	-
	$H_{FE(5)}$	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 = 20mA, 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_g = 1KΩ	-	-	5	dB
Delay time	T_d	V_{CC} = 3V, V_{BE} = 0.5V	-	-	35	nS
Rise time	T_r	I_C = 10mA , I_{B1} = -I_{B2} = 1mA	-	-	35	nS
Storage time	T_s	V_{CC} = 3V, I_C = 10mA	-	-	200	nS
Fall time	T_f	I_{B1} = -I_{B2} = 1mA	-	-	50	nS

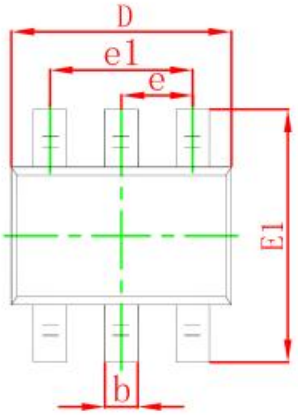
MAXIMUM RATINGS (T_j = 25°C unless otherwise specified)

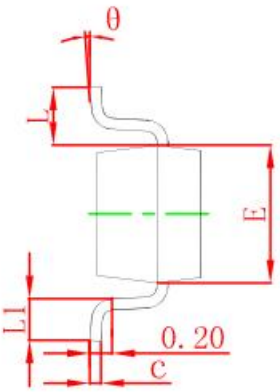
Parameter	Symbol	Value	Unit
Collector-base voltage	V_{CBO}	-40	V
Collector-emitter voltage	V_{CEO}	-40	V
Emitter-base voltage	V_{EBO}	-5	V
Collector current -continuous	I_C	-0.2	A
Collector power dissipation	P_C	0.2	W
Operating junction and storage temperature range	T_j, T_{stg}	-55 ~ 150	°C

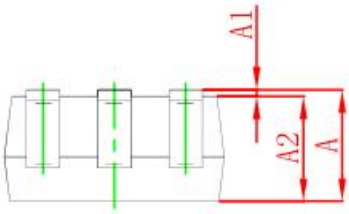
ELECTRICAL CHARACTERISTICS (T_j = 25°C unless otherwise specified)

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C = -10μA, I_E = 0A	-40	-	-	V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C = -1mA, I_B = 0A	-40	-	-	
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E = -10μA, I_C = 0A	-5	-	-	
Collector cut-off current	I_{CBO}	V_{CB} = -30V, I_E = 0A	-	-	-0.05	μA
Emitter cut-off current	I_{EBO}	V_{EB} = -5V, I_C = 0A	-	-	-0.05	
DC current gain	$H_{FE(1)}$	V_{CE} = -1V, I_C = -0.1mA	60	-	-	-
	$H_{FE(2)}$	V_{CE} = -1V, I_C = -1mA	80	-	-	-
	$H_{FE(3)}$	V_{CE} = -1V, I_C = -10mA	100	-	300	-
	$H_{FE(4)}$	V_{CE} = -1V, I_C = -50mA	60	-	-	-
	$H_{FE(5)}$	V_{CE} = -1V, I_C = -100mA	30	-	-	-
Collector-emitter saturation voltage	$V_{CE(sat)1}$	I_C = -10mA, I_B = -1mA	-	-	-0.25	V
	$V_{CE(sat)2}$	I_C = -50mA, I_B = -5mA	-	-	-0.4	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	250	-	-	MHz
Collector output capacitance	C_{ob}	V_{CB} = -5V,I_E = 0, f = 1MHz	-	-	4.5	pF
Noise figure	NF	V_{CE} = -5V, I_c = -0.1mA, f = 1KHz, R_g = 1KΩ	-	-	4	dB
Delay time	T_d	V_{CC} = -3V, V_{BE} = -0.5V	-	-	35	nS
Rise time	T_r	I_C = -10mA , I_{B1} = -I_{B2} = -1mA	-	-	35	nS
Storage time	T_s	V_{CC} = -3V, I_C = -10mA	-	-	225	nS
Fall time	T_f	I_{B1} = -I_{B2} = -1mA	-	-	75	nS

SOT-363 PACKAGE OUTLINE DIMENSIONS

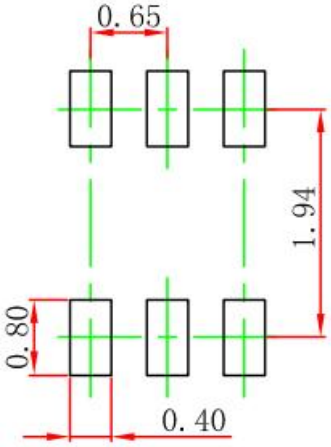






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.100	0.150	0.004	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.400	0.085	0.094
e	0.650 TYP		0.026 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

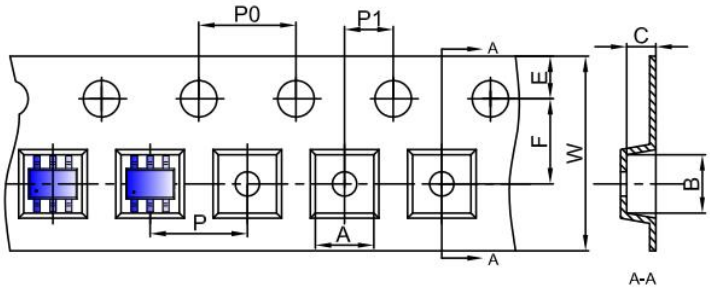


Note:

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

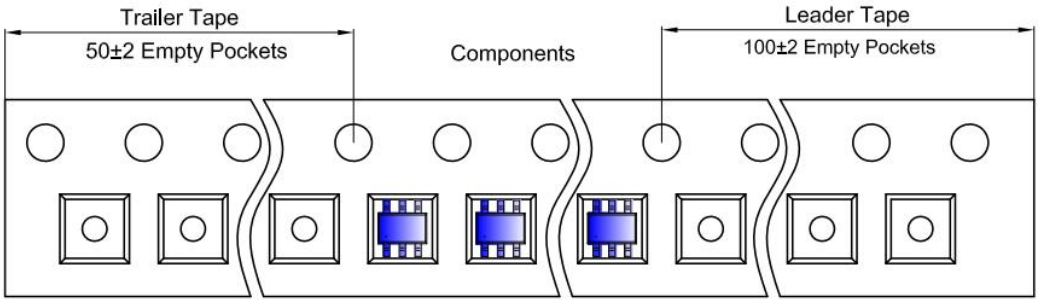


Packaging Description:

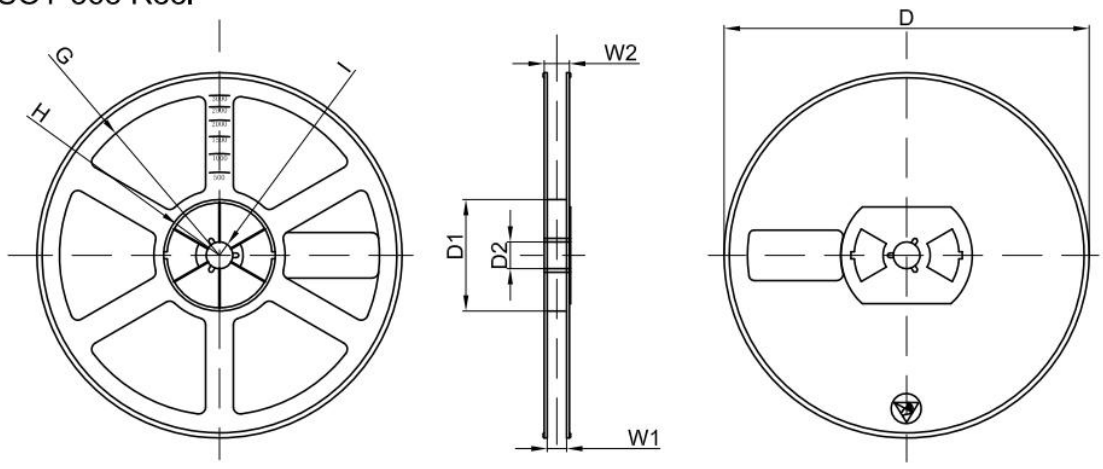
SOT-363 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts 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	

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