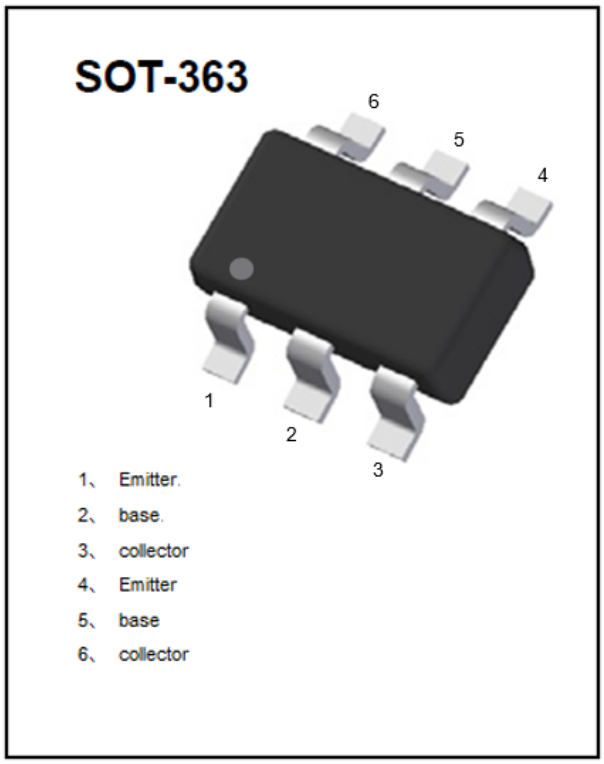
Dual NPN+PNP Small Signal Transistor



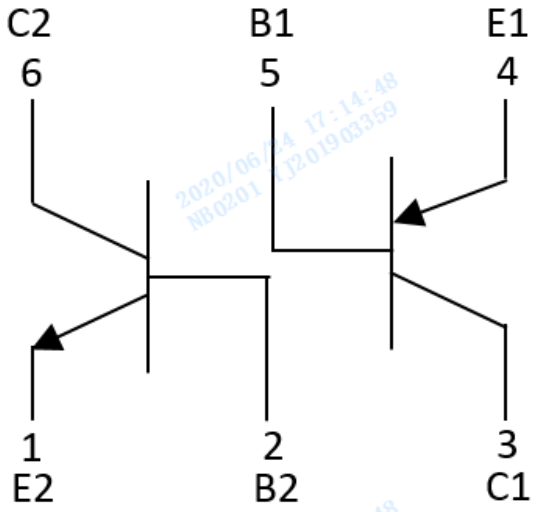
Features

- Epoxy meets UL-94 V-0 flammability rating
- Surface mount package ideally Suited for Automatic Insertion
- NPN/PNP

Mechanical Data

- **Package:** SOT-363
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** K46

■Equivalent circuit



■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
MMDT3946	F2	Approximate 0.009g	3000	30000	120000	7” reel

■TR1 NPN Pin1、2、6 Maximum Ratings (Ta=25℃ Unless otherwise specified)

Item	Symbol	Unit	Conditions	Value
Collector-Base Voltage	V_{CBO}	V	I_C=10μA,I_E=0	60
Collector-Emitter Voltage	V_{CEO}	V	I_C =1mA,I_B=0	40
Emitter-Base Voltage	V_{EBO}	V	I_E=10μA,I_C=0	6
Collector Current -Continuous	I_C	mA		200
Total Device Dissipation	P_C	mW		200
Junction Temperature	Tj	℃		150
Storage Temperature	T_{STG}	℃		-55 to +150

■TR1 NPN Pin1、2、6 Electrical Characteristics (Ta=25℃ unless otherwise specified)

Item	Symbol	Unit	Conditions	Min	TYP	Max
Collector-base breakdown voltage	V_{CBO}	V	IC=10μA,IE=0	60		
Collector-emitter breakdown voltage	V_{CEO}	V	IC =1mA,IB=0	40		
Emitter-base breakdown voltage	V_{EBO}	V	IE=10μA,IC=0	6		
Collector cut-off current	I_{CBO}	nA	VCB=30V,IE=0			50
Collector cut-off current	I_{CEO}	nA	VCE=30V,IB=0			50
Collector cut-off current	I_{EBO}	nA	VEB=5V, IC=0			50
DC current gain	$h_{FE}1$		VCE=1V,IC=0.1mA	40		
	$h_{FE}2$		VCE=1V,IC=1mA	70		
	$h_{FE}3$		VCE=1V,IC=10mA	100		300
	$h_{FE}4$		VCE=1V,IC=50mA	60		
	$h_{FE}5$		VCE=1V,IC=100mA	30		
Collector-emitter saturation voltage	$V_{CE(sat)}$	V	IC=10mA,IB=1mA			0.2
		V	IC=50mA,IB=5mA			0.3
Base-emitter saturation voltage	$V_{BE(sat)}$	V	IC=10mA,IB=1mA	0.65		0.85
		V	IC=50mA,IB=5mA			0.95
Transition frequency	f_T	MHz	VCE=20V,IC=20mA,f=100MHz	300		
Delay Time	td	ns	VCC=3V, IC=10mA, VBE=0.5V, IB1=1mA			35
Rise Time	tr	ns				35
Storage Time	ts	ns	VCC=3V, IC=10mA, IB1=-IB2=1mA			200
Fall Time	tf	ns				50
Output capacitance	Cob	pF	VCB=5V,IE=0A,f=1MHz			4

■TR2 PNP Pin3、4、5 Maximum Ratings (Ta=25℃ Unless otherwise specified)

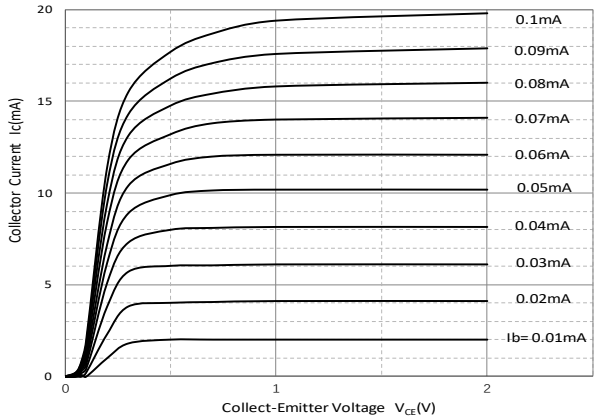
Item	Symbol	Unit	Conditions	Value
Collector-Base Voltage	VCBO	V	IC=-10μA,IE=0	-40
Collector-Emitter Voltage	VCEO	V	IC =-1mA,IB=0	-40
Emitter-Base Voltage	VEBO	V	IE=-10μA,IC=0	-5
Collector Current	IC	mA		-200
Total Device Dissipation	PC	mW		200
Junction Temperature	Tj	℃		150
Storage Temperature	TSTG	℃		-55 to +150

■TR2 PNP Pin3、4、5 Electrical Characteristics (Ta=25℃ unless otherwise specified)

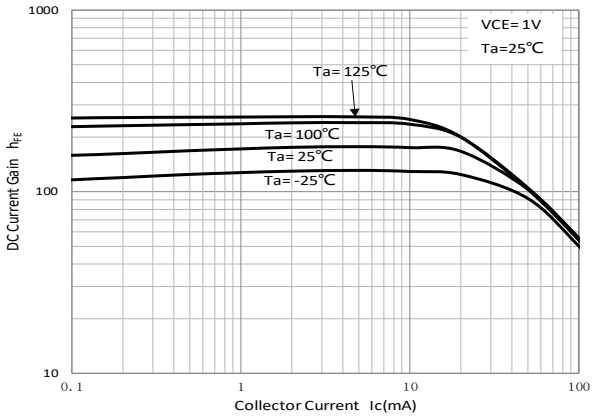
Item	Symbol	Unit	Conditions	Min	TYP	Max
Collector-base breakdown voltage	V_{CBO}	V	IC=-10μA,IE=0	-40		
Collector-emitter breakdown voltage	V_{CEO}	V	IC =-1mA,IB=0	-40		
Emitter-base breakdown voltage	V_{EBO}	V	IE=-10μA,IC=0	-5		
Collector-Base cut-off current	I_{CBO}	nA	VCB=-30V,IE=0			-50
Emitter-Base cut-off current	I_{EBO}	nA	VEB=-5V,IC=0			-50
DC current gain	$h_{FE}1$		VCE=-1V,IC=-0.1mA	40		
	$h_{FE}2$		VCE=-1V,IC=-1mA	70		
	$h_{FE}3$		VCE=-1V,IC=-10mA	100		300
	$h_{FE}4$		VCE=-1V,IC=-50mA	60		
	$h_{FE}5$		VCE=-1V,IC=-100mA	30		
Collector-emitter saturation voltage	$V_{CE(sat)}$	V	IC=-10mA,IB=-1mA			-0.25
		V	IC=-50mA,IB=-5mA			-0.4
Base-emitter saturation voltage	$V_{BE(sat)}$	V	IC=-10mA,IB=-1mA	-0.65		-0.85
		V	IC=-50mA,IB=-5mA			-0.95
Transition frequency	f_T	MHz	VCE=-20V,IE=-10mA,f=100MHz	250		
Delay Time	td	ns	VCC=-3V, IC=-10mA, VBE=-0.5V, IB1=-1mA			35
Rise Time	tr	ns				35
Storage Time	ts	ns	VCC=-3V, IC=-10mA, IB1=-IB2=-1mA			225
Fall Time	tf	ns				75
Output capacitance	Cob	pF	VCB=-5V,IE=0A,f=1MHz			4.5

■ TR1 NPN Pin1、2、6 Characteristics (Typical)

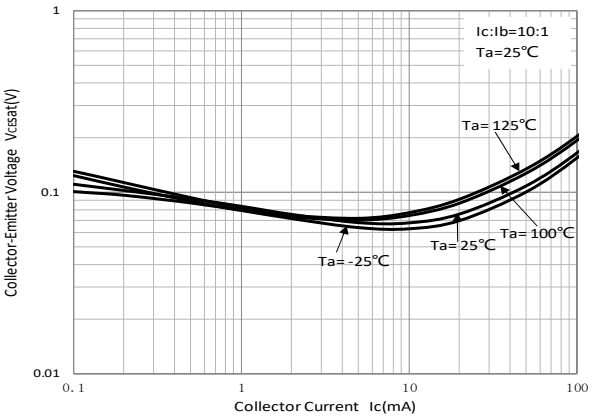
Static Characteristic



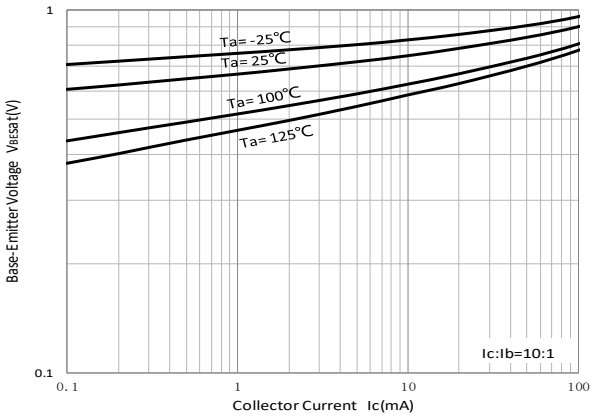
DC Current Gain



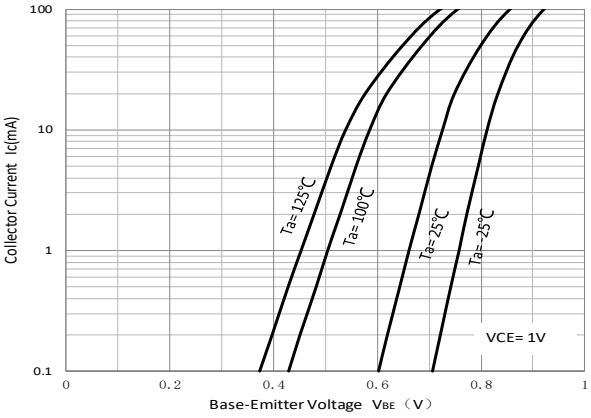
Collector-Emitter Saturation Voltage



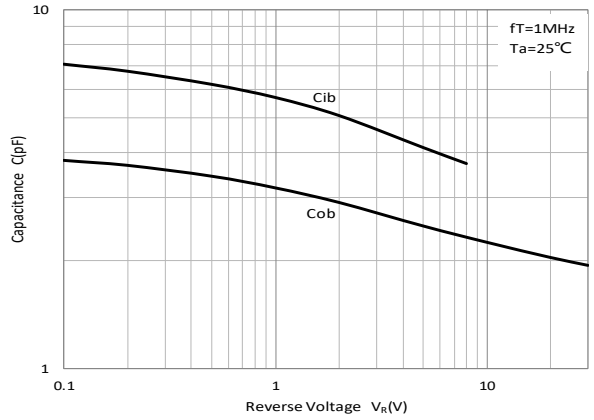
Base-Emitter Saturation Voltage



Base-Emitter On Voltage

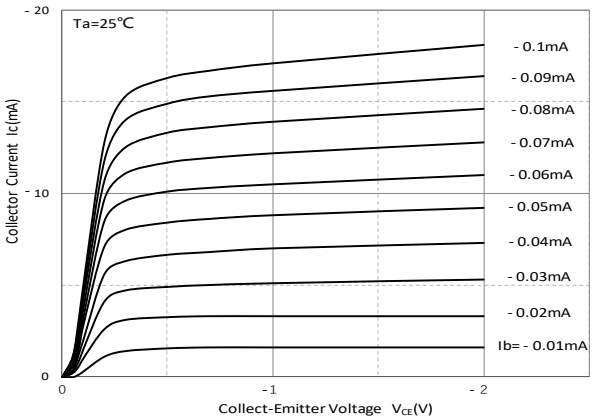


Cob/Cib-V_{CB}/V_{EB}

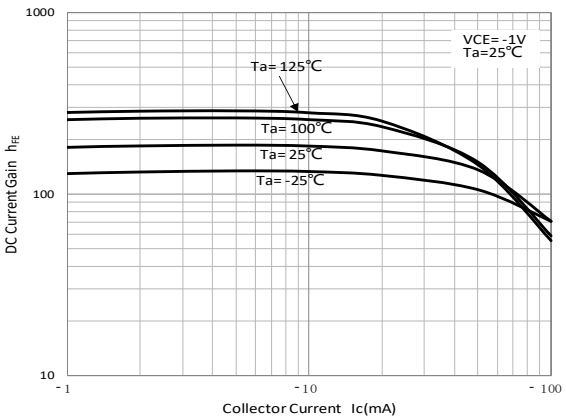


■ TR2 PNP Pin3、4、5 Characteristics (Typical)

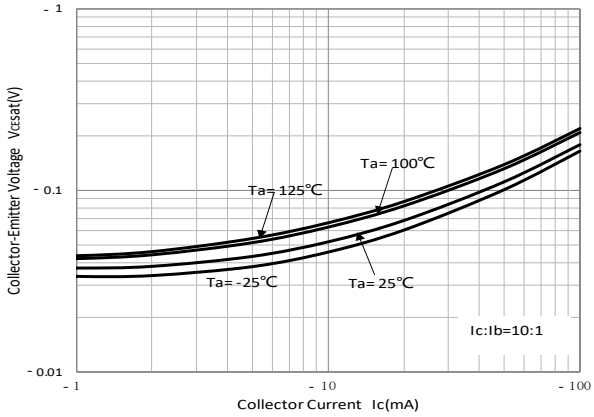
Static Characteristic



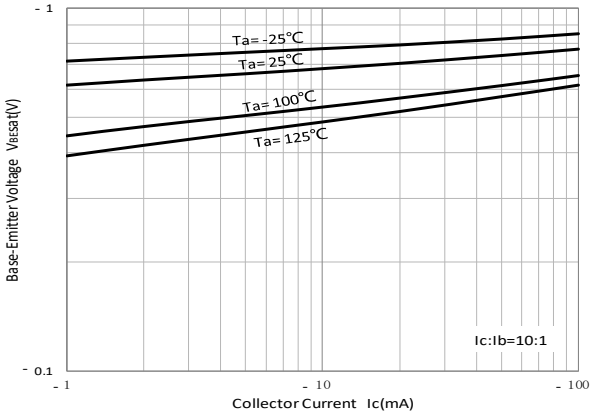
DC Current Gain



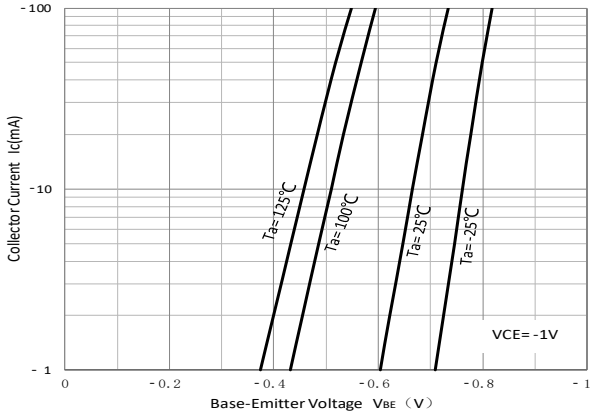
Collector-Emitter Saturation Voltage



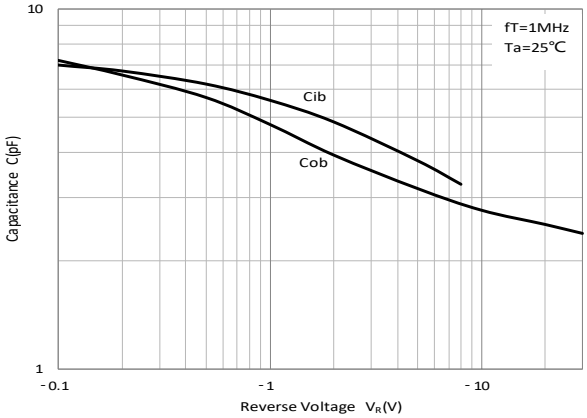
Base-Emitter Saturation Voltage



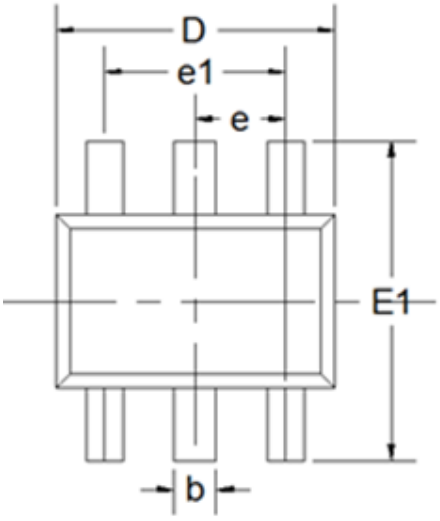
Base-Emitter On Voltage



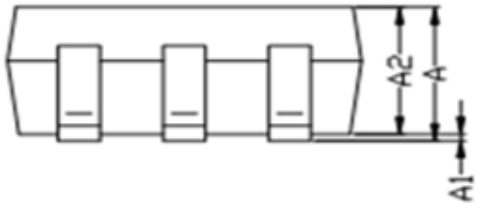
Cob/Cib-V_{CB}/V_{EB}

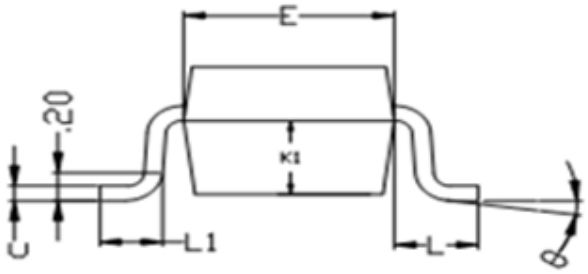


■SOT-363 Package Outline Dimensions

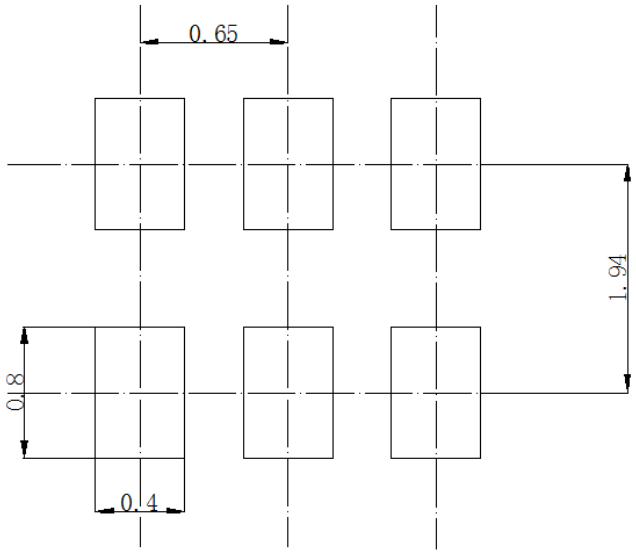


DIMENSIONS				
DIM	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.035	0.043	0.9	1.1
A1	0	0.004	0	0.1
A2	0.035	0.039	0.9	1
b	0.006	0.014	0.15	0.35
c	0.002	0.01	0.05	0.25
D	0.071	0.087	1.8	2.2
E	0.045	0.053	1.15	1.35
E1	0.085	0.096	2.15	2.45
e	0.026Typ		0.65Typ	
e1	0.047	0.055	1.2	1.4
L	0.021Typ		0.525Typ	
L1	0.01	0.018	0.26	0.46
θ	0°	8°	0°	8°





■SOT-363 Soldering Footprint



Unit：mm

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