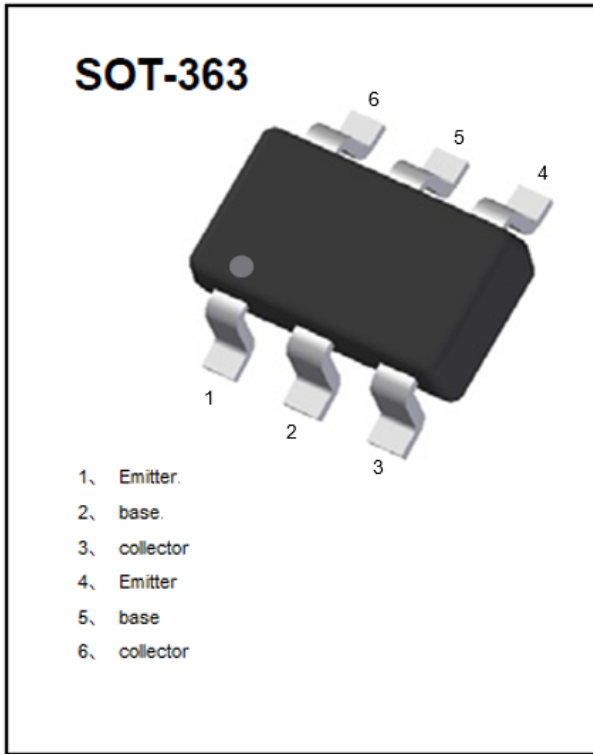


## Dual NPN+PNP Small Signal Transistor



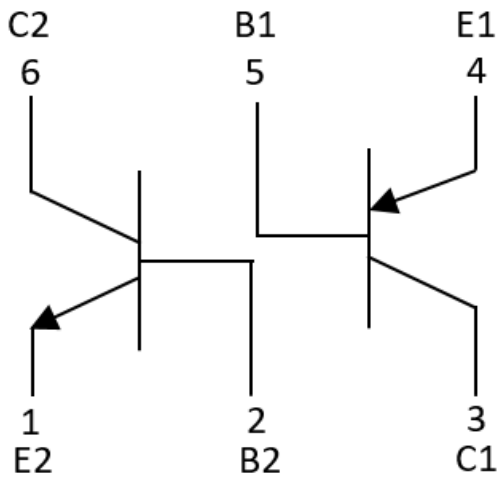
### Features

- 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:** KNM

### Equivalent circuit



### Ordering Information (Example)

PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
MMDT5451	F2	Approximate 0.009g	3000	30000	120000	7" reel



# MMDT5451

## ■TR1 PNP Pin3、4、5 Maximum Ratings (Ta=25°C Unless otherwise specified)

Item	Symbol	Unit	Conditions	Value
Collector-Base Voltage	VCBO	V	IC=-100μA,IE=0	-160
Collector-Emitter Voltage	VCEO	V	IC=-1mA,IB=0	-150
Emitter-Base Voltage	VEBO	V	IE=-10μA,IC=0	-5
Collector Current -Continuous	IC	mA		-200
Total Device Dissipation	PC	mW		200
Junction Temperature	Tj	°C		150
Storage Temperature	TSTG	°C		-55 to +150

## ■TR1 PNP Pin3、4、5 Electrical Characteristics (Ta=25°C unless otherwise specified)

Item	Symbol	Unit	Conditions	Min	TYP	Max
Collector-base breakdown voltage	V <sub>CBO</sub>	V	IC=-100μA,IE=0	-160		
Collector-emitter breakdown voltage	V <sub>CEO</sub>	V	IC=-1mA,IB=0	-150		
Emitter-base breakdown voltage	V <sub>EBO</sub>	V	IE=-10μA,IC=0	-5		
Collector cut-off current	I <sub>CBO</sub>	nA	VCB=-120V,IE=0			-50
Emmitter cut-off current	I <sub>EBO</sub>	nA	VEB=-3V, IC=0			-50
DC current gain	h <sub>FE1</sub>		VCE=-5V,IC=-1mA	50		
	h <sub>FE2</sub>		VCE=-5V,IC=-10mA	100		300
	h <sub>FE3</sub>		VCE=-5V,IC=-50mA	50		
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	V	IC=-10mA,IB=-1mA			-0.2
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	V	IC=-50mA,IB=-5mA			-0.5
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	V	IC=-10mA,IB=-1mA			-1
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	V	IC=-50mA,IB=-5mA			-1
Transition frequency	f <sub>T</sub>	MHz	VCE=-10V,IC=-10mA,f=100MHz	100		300
Output capacitance	C <sub>obo</sub>	pF	VCE=-10V,IE=0,f=1MHz			6



# MMDT5451

## ■TR2 NPN Pin1、2、6 Maximum Ratings (Ta=25°C Unless otherwise specified)

Item	Symbol	Unit	Conditions	Value
Collector-Base Voltage	VCBO	V	IC=100μA,IE=0	180
Collector-Emitter Voltage	VCEO	V	IC=1mA,IB=0	160
Emitter-Base Voltage	VEBO	V	IE=10μA,IC=0	6
Collector Current -Continuous	IC	mA		200
Total Device Dissipation	PC	mW		200
Junction Temperature	Tj	°C		150
Storage Temperature	TSTG	°C		-55 to +150

## ■TR2 NPN Pin1、2、6 Electrical Characteristics (Ta=25°C unless otherwise specified)

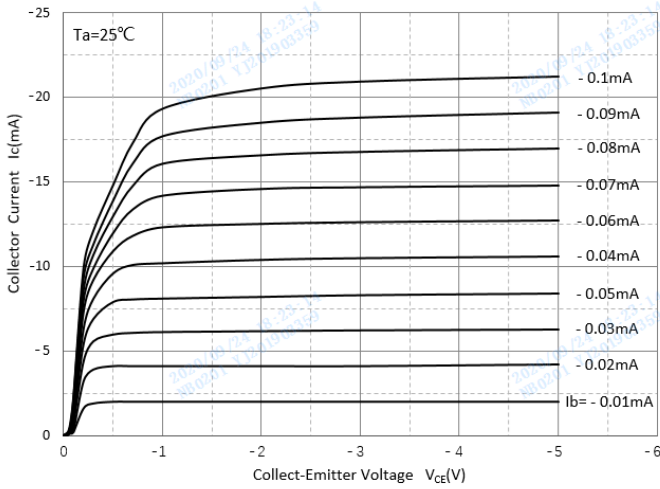
Item	Symbol	Unit	Conditions	Min	TYP	Max
Collector-base breakdown voltage	V <sub>CBO</sub>	V	IC=100μA,IE=0	180		
Collector-emitter breakdown voltage	V <sub>CEO</sub>	V	IC=1mA,IB=0	160		
Emitter-base breakdown voltage	V <sub>EBO</sub>	V	IE=10μA,IC=0	6		
Collector cut-off current	I <sub>CBO</sub>	nA	VCB=120V,IE=0			50
Emmitter cut-off current	I <sub>EBO</sub>	nA	VEB=4V, IC=0			50
DC current gain	h <sub>FE1</sub>		VCE=5V,IC=1mA	80		
	h <sub>FE2</sub>		VCE=5V,IC=10mA	100		300
	h <sub>FE3</sub>		VCE=5V,IC=50mA	30		
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	V	IC=10mA,IB=1mA			0.15
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	V	IC=50mA,IB=5mA			0.2
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	V	IC=10mA,IB=1mA			1
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	V	IC=50mA,IB=5mA			1
Transition frequency	f <sub>T</sub>	MHz	VCE=10V,IC=10mA,f=100MHz	100		300
Output capacitance	C <sub>obo</sub>	pF	VCE=10V,IE=0,f=1MHz			6



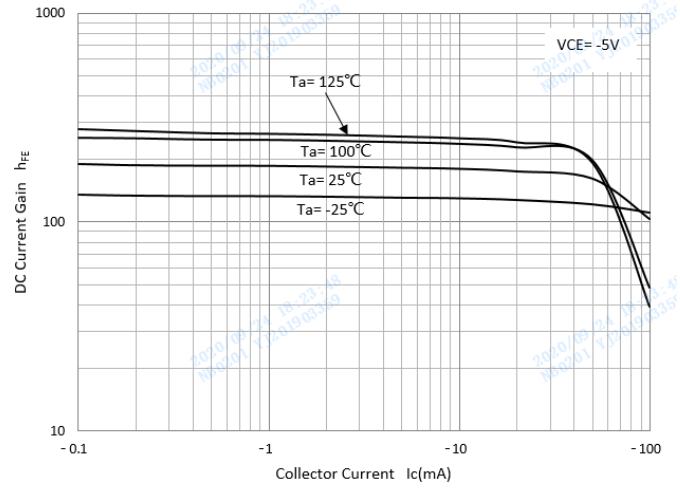
# MMDT5451

## TR1 PNP Pin3、4、5 Characteristics (Typical)

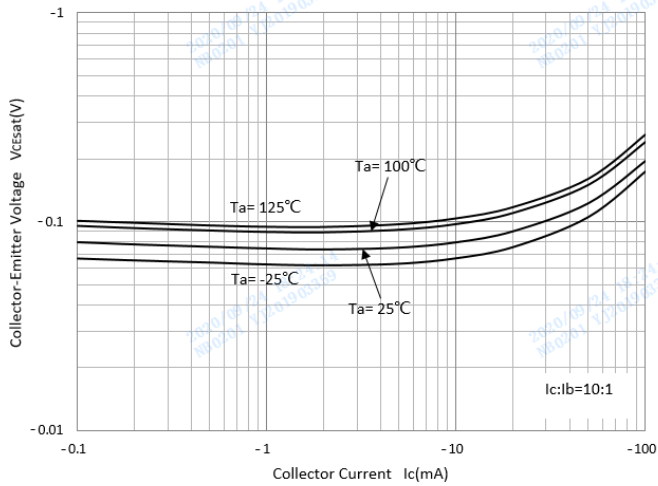
Static Characteristic



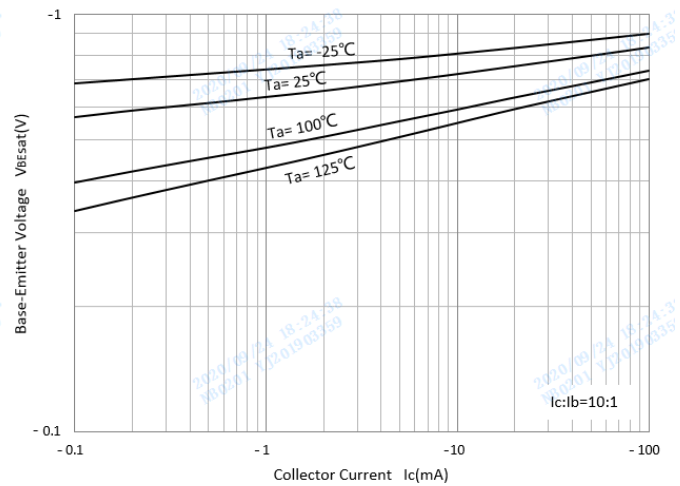
DC Current Gain



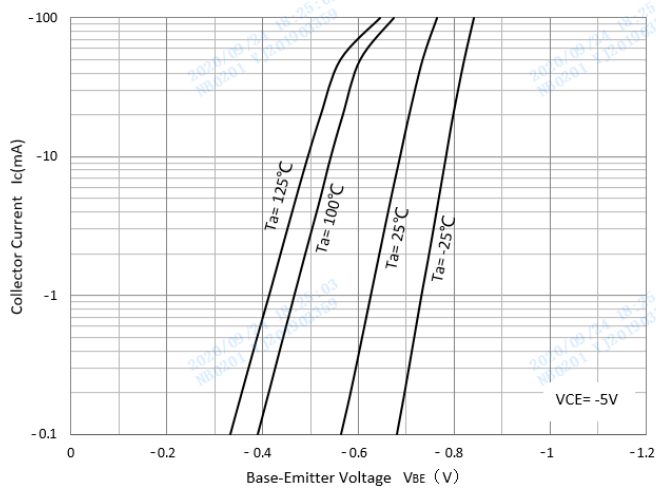
Collector-Emittor Saturation Voltage



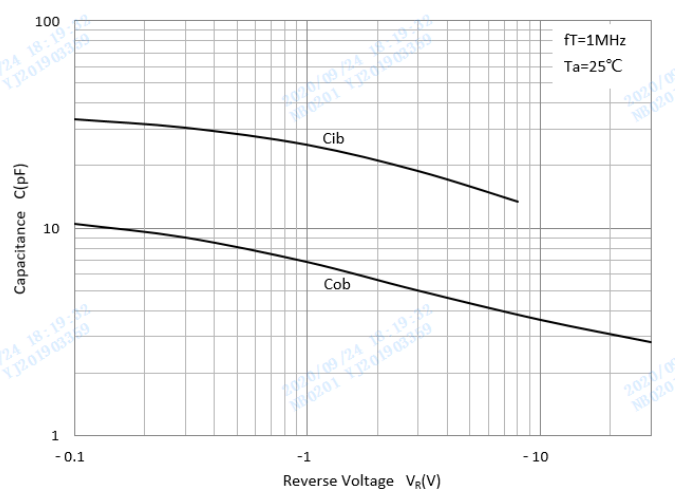
Base-Emittor Saturation Voltage



Base-Emittor On Voltage



$C_{ob}/C_{ib}-V_{CB}/V_{EB}$

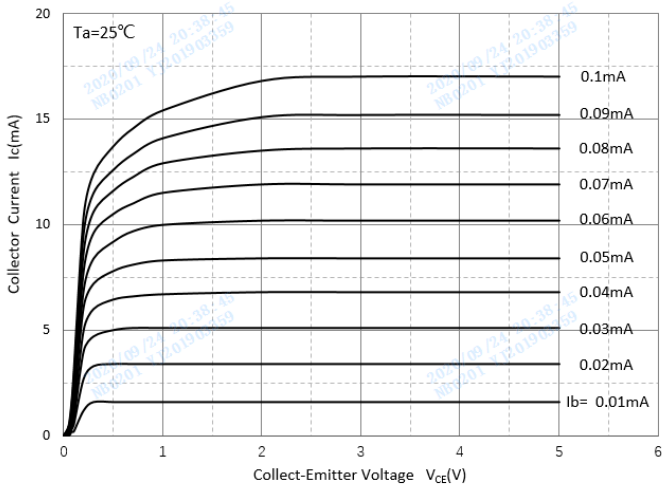




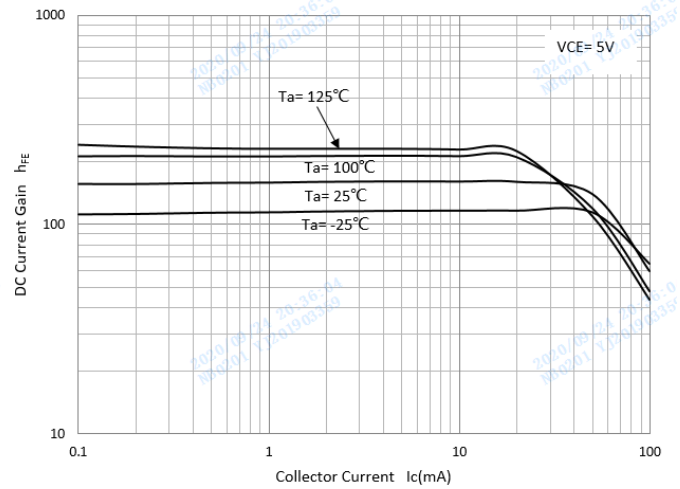
# MMDT5451

## ■ TR2 NPN Pin1、2、6 Characteristics (Typical)

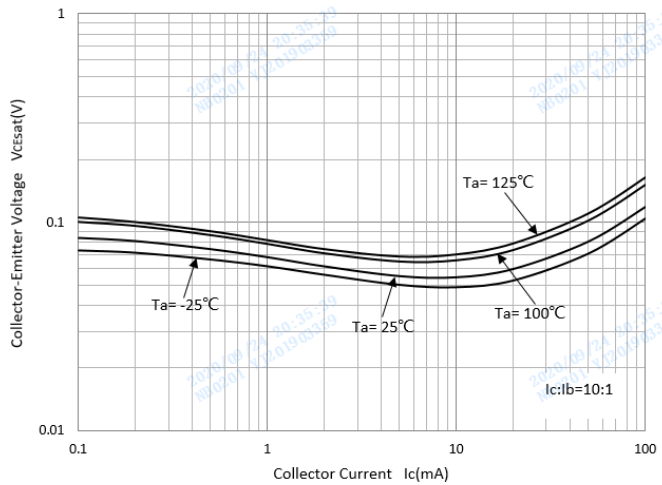
Static Characteristic



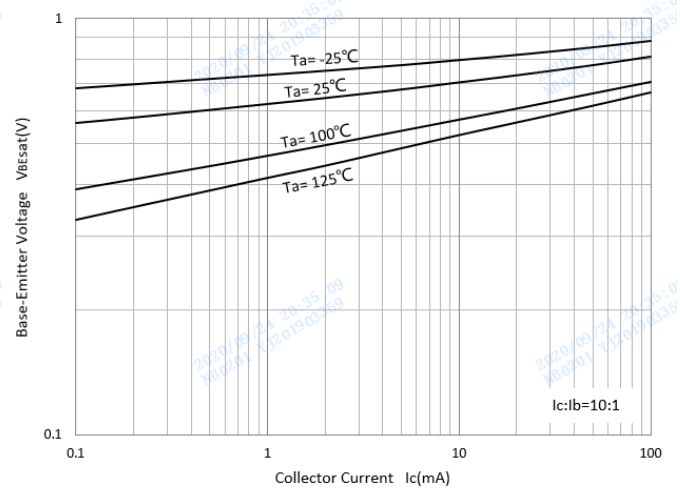
DC Current Gain



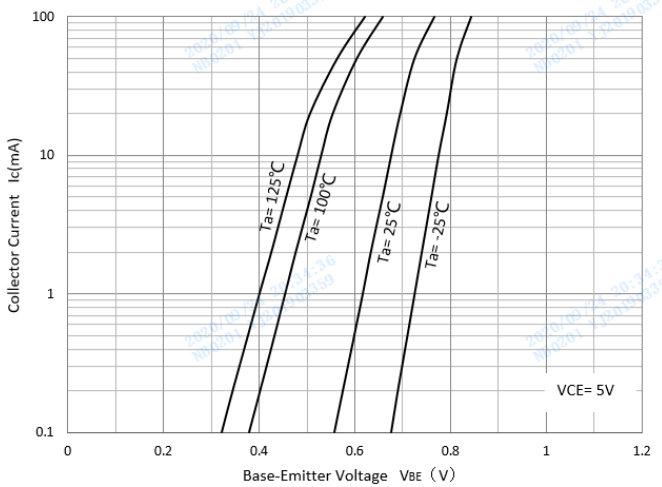
Collector-Emmitter Saturation Voltage



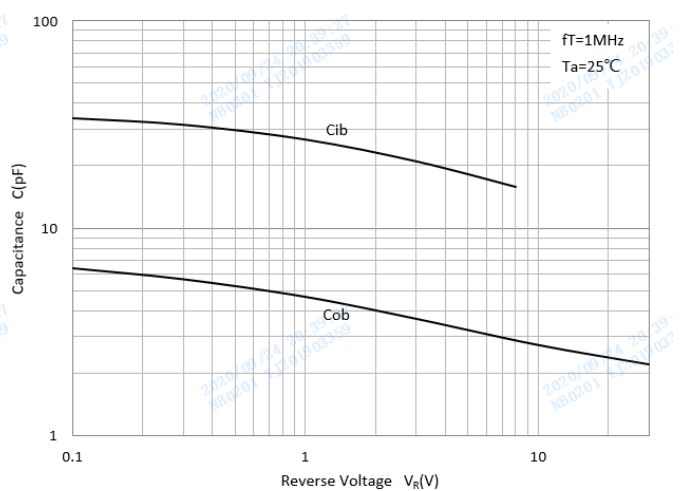
Base-Emmitter Saturation Voltage



Base-Emmitter On Voltage



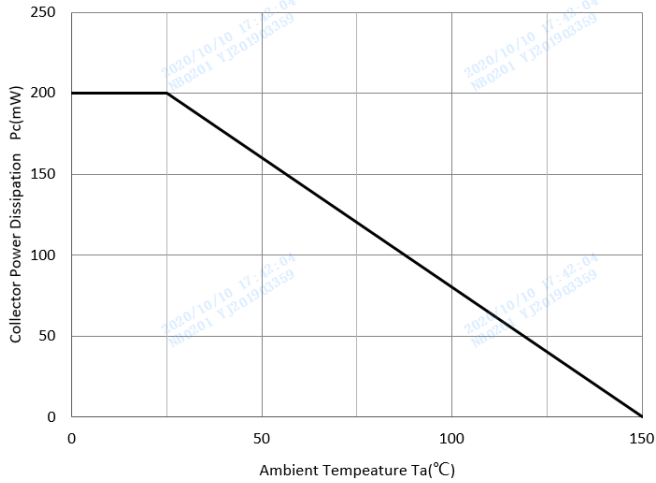
$C_{ob}/C_{ib}-V_{CB}/V_{EB}$



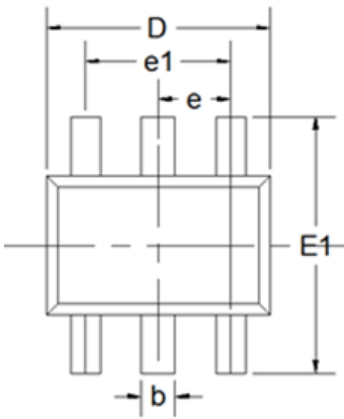


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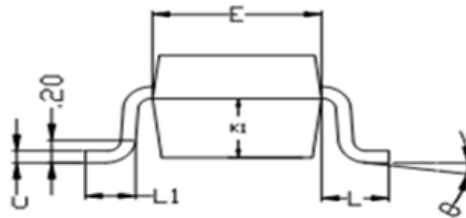
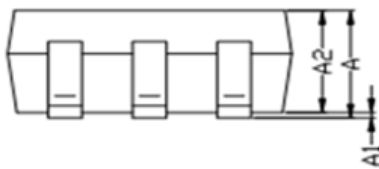
### Collector Power Derating Curve



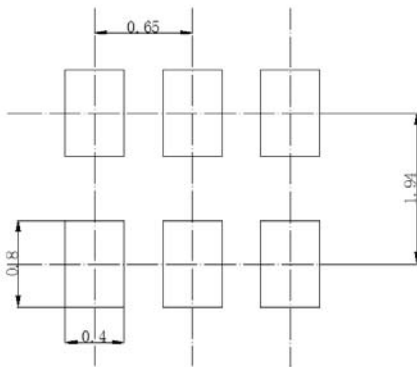
## ■SOT-363 Package Outline Dimensions



DIM	DIMENSIONS			
	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
φ	0°	8°	0°	8°



## ■SOT-363 Soldering Footprint



Unit: mm



## MMDT5451

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