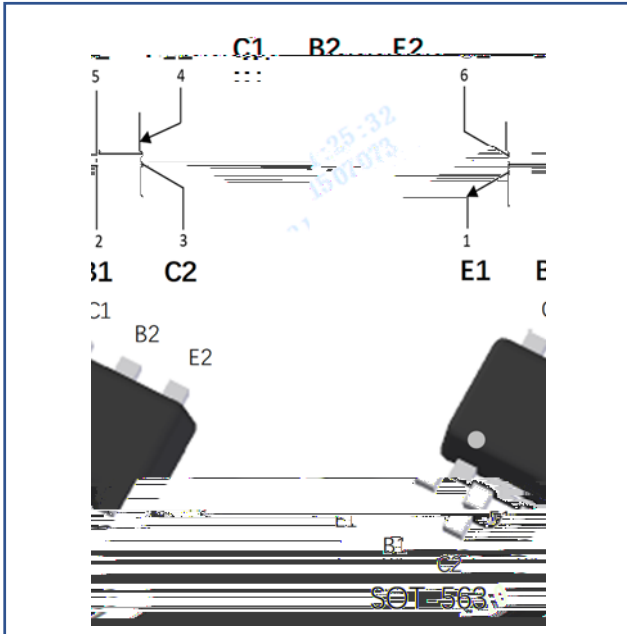


## Dual NPN+PNP Small Signal Transistor



### Features

- Moisture sensitivity level 1
- Halogen free and RoHS compliant
- Surface mount package ideally suited for automatic Insertion

### Application

- Signal amplification
- Switching circuit

### Mechanical data

- **Package** SOT-563
- **Terminals** Tin plated leads, solderable per J-STD-002 and JESD22-B102

**Maximum Ratings** ( $T_a=25$  Unless otherwise specified)

### TR1-NPN

Item	Symbol	Unit	Conditions	Value
Device marking code				K46
Collector-base voltage	$V_{CBO}$	V	$I_C=10\mu A, I_E=0$	60
Collector-emitter voltage	$V_{CEO}$	V	$I_C=1mA, I_B=0$	40
Emitter-base voltage	$V_{EBO}$	V	$I_E=10\mu A, I_C=0$	6
Collector current	$I_C$	mA		200
Power dissipation	$P_D$	mW		150
Junction temperature	$T_J$			-55 to +150
Storage temperature	$T_{STG}$			-55 to +150



# MMDT3946V

RoHS  
COMPLIANT

## TR2-PNP

Item	Symbol	Unit	Conditions	Value
------	--------	------	------------	-------



## MMDT3946V

RoHS  
COMPLIANT

Item	Symbol	Unit	Conditions	Min	Typ	Max
Transition frequency	$f_T$	MHz	$V_{CE}=20V, I_C=20mA, f=100MHz$	300		
Delay time	$t_d$	ns	$V_{CC}=3V, I_C=10mA, V_{BE}=0.5V,$ $I_{B1}=1mA$			35
Rise time	$t_r$	ns				35
Storage time	$t_s$	ns	$V_{CC}=3V, I_C=10mA, I_{B1}=-I_{B2}=1mA$			200
Fall time	$t_f$	ns				50

### TR2-PNP

Item	Symbol	Unit	Conditions	Min	Typ	Max
------	--------	------	------------	-----	-----	-----



**Thermal Characteristics**

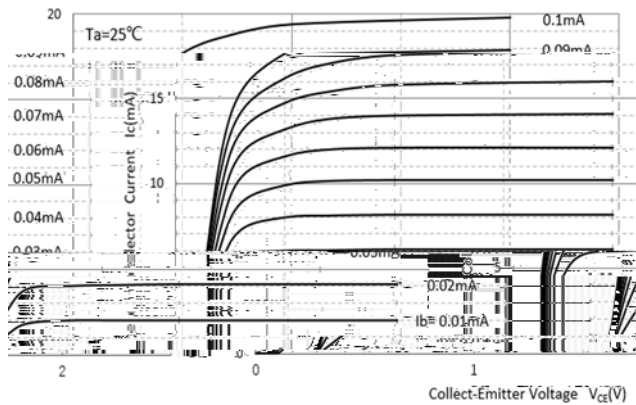
Parameter	Symbol	Unit	Value
Thermal resistance, junction-to-ambient	R J-A <sup>(1)</sup>	/W	833
Thermal resistance, junction-to-case	R J-C <sup>(1)</sup>	/W	667

**Note:**  
 1 Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 25.4mm\*25.4mm copper pad areas

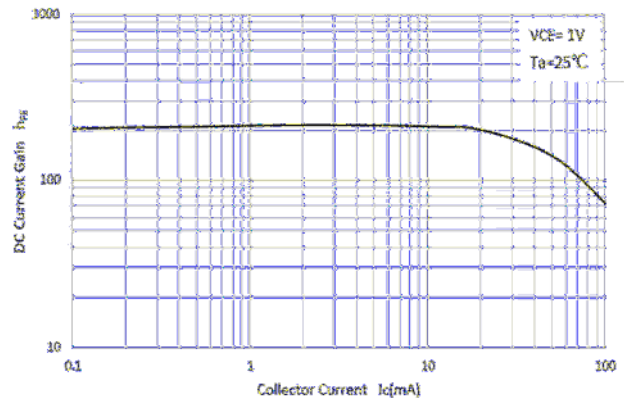
**Characteristics**

**TR1-NPN**

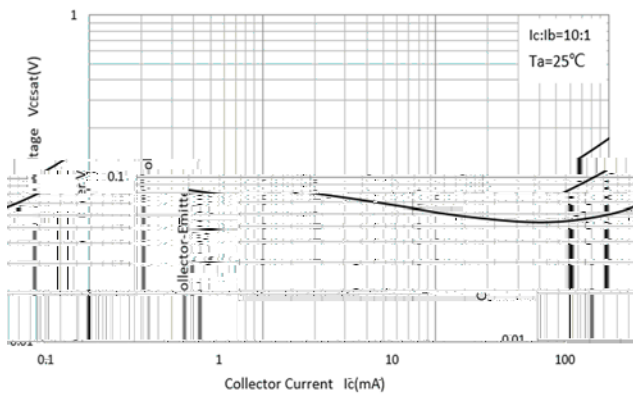
**Fig 1 Static Characteristics**



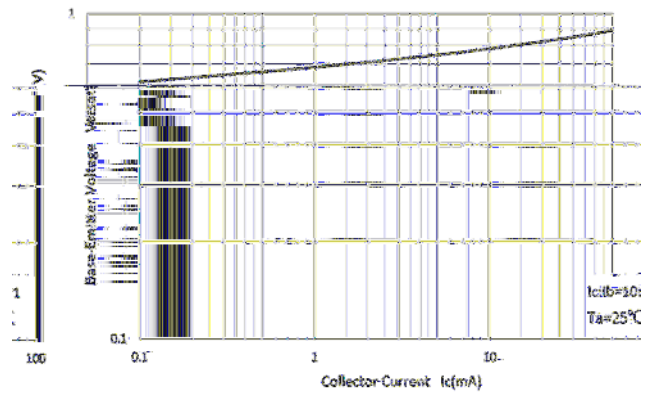
**Fig 2 DC Current Gain**



**Fig 3 Collector-Emitter Saturation Voltage**



**Fig 4 Base-Emitter Saturation Voltage**





# MMDT3946V

RoHS  
COMPLIANT

Fig 5 1ya

1ya



# MMDT3946V

RoHS  
COMPLIANT

Fig 3 Collector-Emitter Saturation Voltage

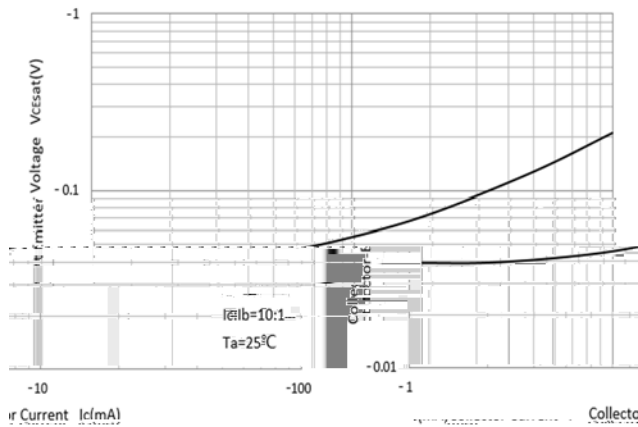


Fig 4 Base-Emitter Saturation Voltage

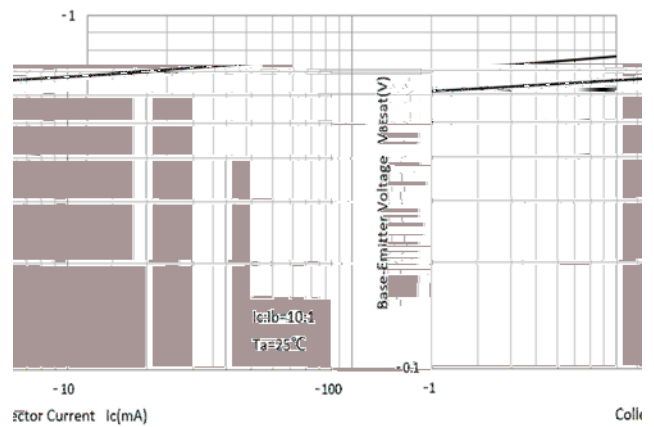


Fig 5 Base-Emitter Voltage



Fig 6 Cob/Cib-V<sub>CB</sub>/V<sub>EB</sub>

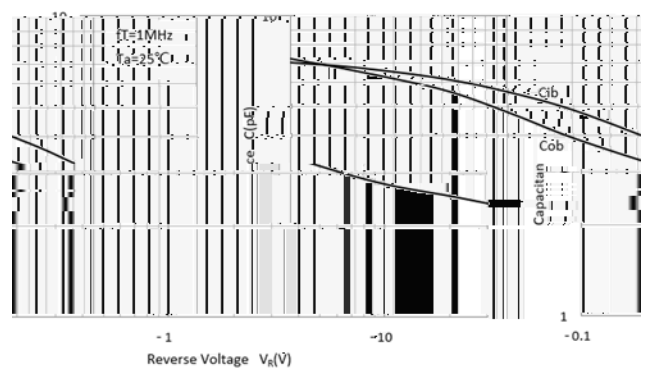
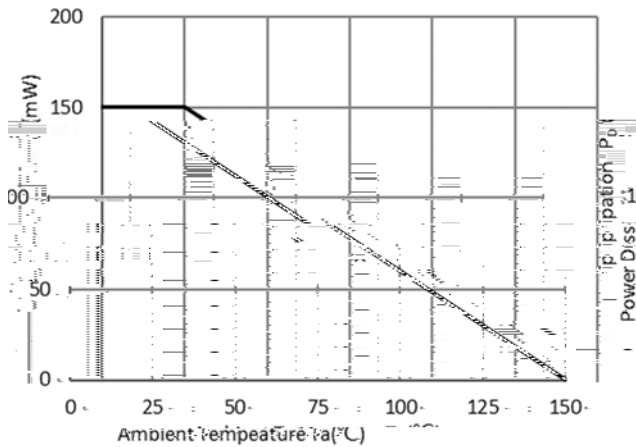


Fig 7 P<sub>D</sub>-T<sub>a</sub> Curve





# MMDT3946V

RoHS  
COMPLIANT

Preferred P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity(pcs)	Delivery mode
---------------	--------------	----------------	----------------------	-------------------------	----------------------------	---------------

