

### MMDT5451 Multi-Chip General Purpose TRANSISTOR (PNP and NPN)

#### FEATURES

Power dissipation

$P_{CM}$ : 200 mW ( $T_{amb}=25^{\circ}C$ )

Collector current

$I_{CM}$ :  $\pm 200$  mA

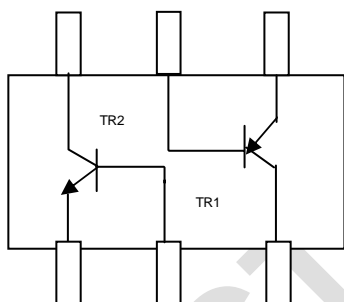
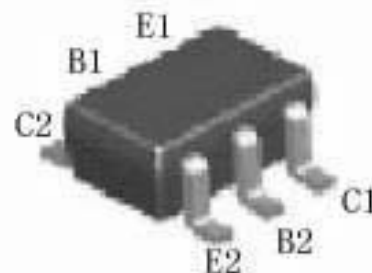
Collector-base voltage

$V_{(BR)CBO}$ : 180/-160 V

Operating and storage junction temperature range

$T_J, T_{stg}$ :  $-55^{\circ}C$  to  $+150^{\circ}C$

### SOT-363



MAKING: KNM

#### TR2(NPN 5551) ELECTRICAL CHARACTERISTICS ( $T_{amb}=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu A, I_E=0$	180			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1mA, I_B=0$	160			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	6			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=120V, I_E=0$			50	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB}=4V, I_C=0$			50	nA
DC current gain	$h_{FE}$	$V_{CE}=5V, I_C=1mA$	80			
		$V_{CE}=5V, I_C=10mA$	80		250	
		$V_{CE}=5V, I_C=50mA$	30			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=10mA, I_B=1mA$ $I_C=50mA, I_B=5mA$			0.15 0.2	V
Emitter-base saturation voltage	$V_{BE(sat)}$	$I_C=10mA, I_B=1mA$ $I_C=50mA, I_B=5mA$			1	V
Transition frequency	$f_T$	$V_{CE}=10V, I_C=10mA, f=100MHz$	100			MHz
Collector output capacitance	$C_{ob}$	$V_{CB}=10V, I_E=0, f=1MHz$			6	pF
Noise Figure	NF	$V_{CE}=5V, I_C=0.2mA, f=1KHz$			8	dB

**TR1(PNP 5401) ELECTRICAL CHARACTERISTICS (Tamb=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=-100\mu A, I_E=0$	-160			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=-1mA, I_B=0$	-150			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=-10\mu A, I_C=0$	-5			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=-120V, I_E=0$			-50	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB}=-3V, I_C=0$			-50	nA
DC current gain	$h_{FE}$	$V_{CE}=-5V, I_C=-1mA$ $V_{CE}=-5V, I_C=-10mA$ $V_{CE}=-5V, I_C=-50mA$	50 60 50		240	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=-10mA, I_B=-1mA$ $I_C=-50mA, I_B=-5mA$			-0.2 -0.5	V
Emitter-base saturation voltage	$V_{BE(sat)}$	$I_C=-10mA, I_B=-1mA$ $I_C=-50mA, I_B=-5mA$			-1	V
Transition frequency	$f_T$	$V_{CE}=-10V, I_C=-10mA, f=100MHz$	100			MHz
Collector output capacitance	$C_{ob}$	$V_{CB}=-10V, I_E=0, f=1MHz$			6	pF
Noise Figure	NF	$V_{CE}=-5V, I_C=-0.2mA, f=1KHz$			8	dB