TKMMBT5551

TRANSISTOR (NPN)

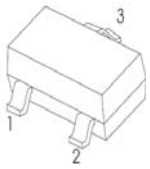
SOT-23 Plastic-Encapsulate Transistors

FEATURES

- Complementary to TKMMBT5401
- Ideal for Medium Power Amplification and Switching

MARKING: G1

SOT－23



1. BASE
2. EMITTER
3. COLLECTOR

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	180	V
V_{CEO}	Collector-Emitter Voltage	160	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current	600	mA
P_C	Collector Power Dissipation	300	mW
$R_{\Theta JA}$	Thermal Resistance From Junction To Ambient	416	℃/W
T_j	Junction Temperature	150	℃
T_{stg}	Storage Temperature	-55～+150	℃

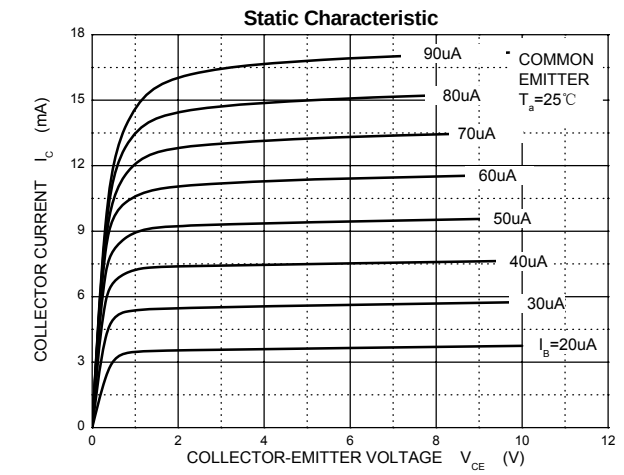
ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

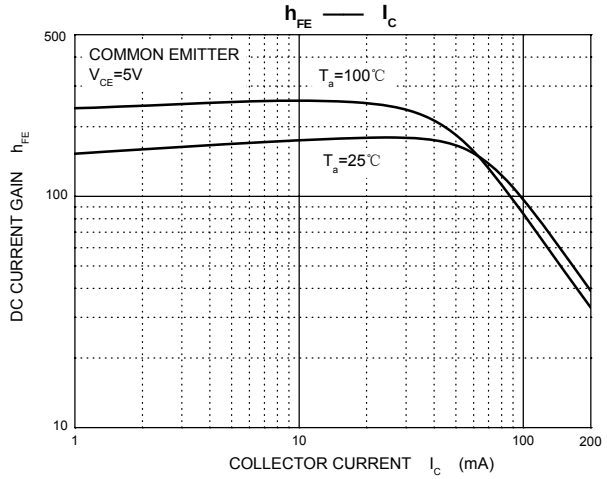
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=100μA, I_E=0	180			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$*	I_C=1mA, I_B=0	160			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=10μA, I_C=0	6			V
Collector cut-off current	I_{CBO}	V_{CB}=120V, I_E=0			50	nA
Emitter cut-off current	I_{EBO}	V_{EB}=4V, I_C=0			50	nA
DC current gain	$h_{FE(1)}$*	V_{CE}=5V, I_C=1mA	80			
	$h_{FE(2)}$*	V_{CE}=5V, I_C=10mA	100		300	
	$h_{FE(3)}$*	V_{CE}=5V, I_C=50mA	50			
Collector-emitter saturation voltage	$V_{CE(sat)1}$*	I_C=10mA, I_B=1mA			0.15	V
	$V_{CE(sat)2}$*	I_C=50mA, I_B=5mA			0.2	V
Base-emitter saturation voltage	$V_{BE(sat)1}$*	I_C=10mA, I_B=1mA			1	V
	$V_{BE(sat)2}$*	I_C=50mA, I_B=5mA			1	V
Transition frequency	f_T	V_{CE}=10V,I_C=10mA, f=100MHz	100		300	MHz
Collector output capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz			6	pF

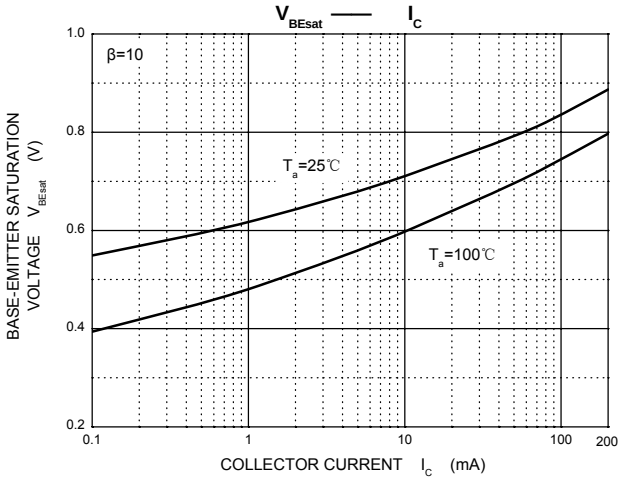
*Pulse test: pulse width ≤300μs, duty cycle≤ 2.0%.

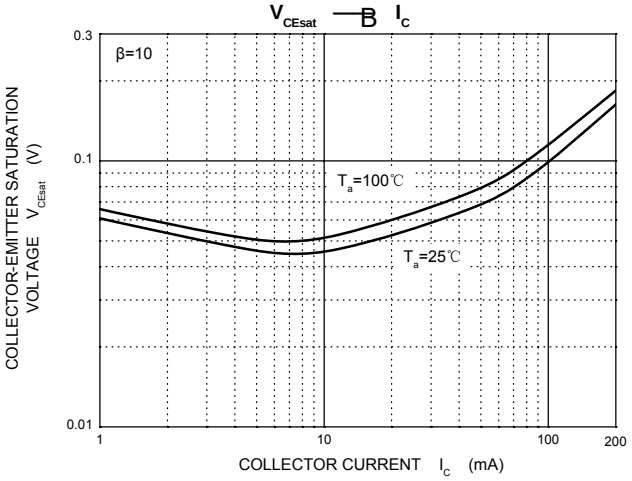
CLASSIFICATION OF $h_{FE(2)}$

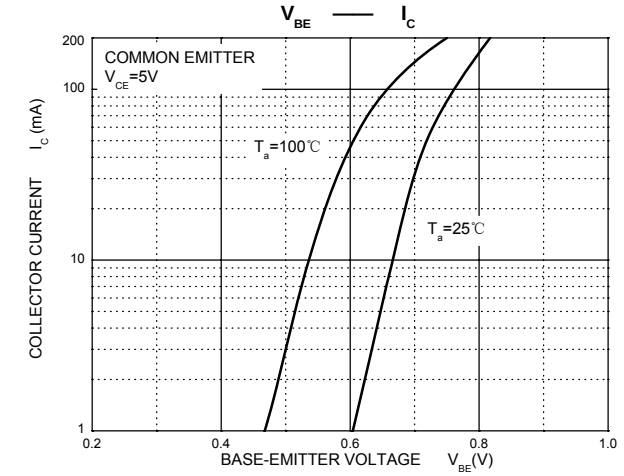
RANGE	100-300

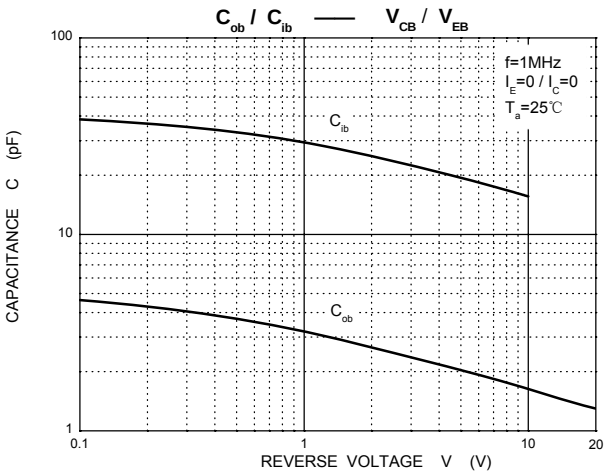

Static Characteristic
COMMON EMITTER
Ta=25℃
90uA
80uA
70uA
60uA
50uA
40uA
30uA
IB=20uA
COLLECTOR CURRENT IC (mA)
COLLECTOR-EMITTER VOLTAGE VCE (V)

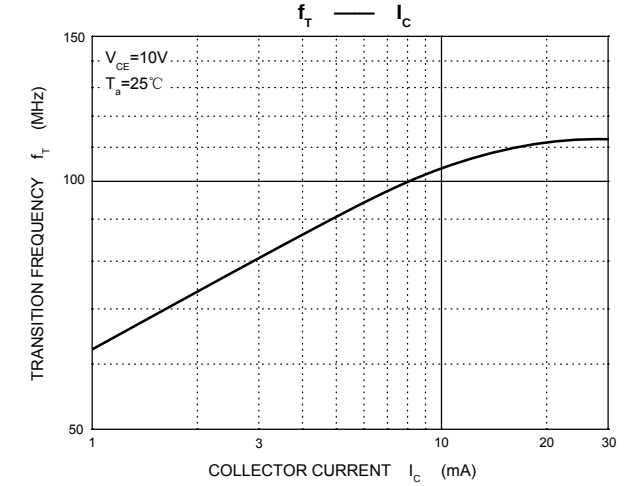

hFE —— IC
COMMON EMITTER
VCE=5V
Ta=100℃
Ta=25℃
DC CURRENT GAIN hFE
COLLECTOR CURRENT IC (mA)

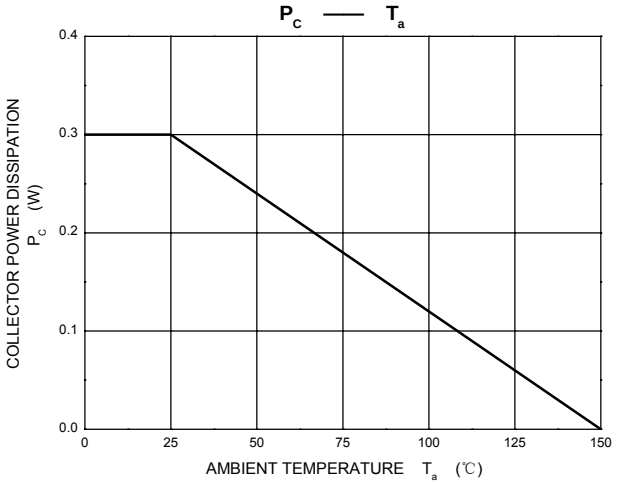

VBEsat —— IC
β=10
Ta=25℃
Ta=100℃
BASE-EMITTER SATURATION VOLTAGE VBEsat (V)
COLLECTOR CURRENT IC (mA)


VCEsat —— IC
β=10
Ta=100℃
Ta=25℃
COLLECTOR-EMITTER SATURATION VOLTAGE VCEsat (V)
COLLECTOR CURRENT IC (mA)

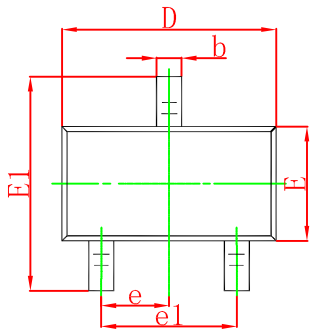

VBE —— IC
COMMON EMITTER
VCE=5V
Ta=100℃
Ta=25℃
COLLECTOR CURRENT IC (mA)
BASE-EMITTER VOLTAGE VBE(V)

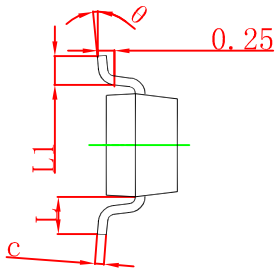

Cob / Cib —— VCB / VEB
f=1MHz
IE=0 / IC=0
Ta=25℃
Cib
Cob
CAPACITANCE C (pF)
REVERSE VOLTAGE V (V)

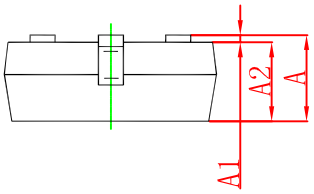

fT —— IC
VCE=10V
Ta=25℃
TRANSITION FREQUENCY fT (MHz)
COLLECTOR CURRENT IC (mA)


PC —— Ta
COLLECTOR POWER DISSIPATION PC (W)
AMBIENT TEMPERATURE Ta (℃)

SOT-23 Package Outline Dimensions

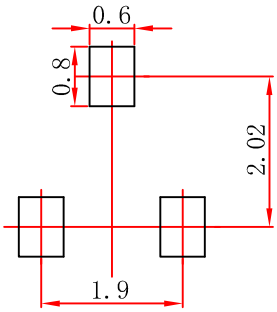






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.