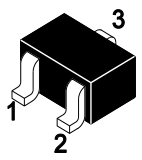
JXND ELECTRONICS CO.,LTD

General Purpose Transistors NPN Silicon
MBT4401WT1G S-MBT4401WT1G

1. FEATURES

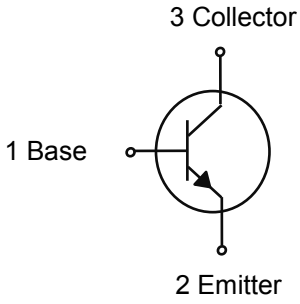
- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.



SC70(SOT-323)

2. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
MBT4401WT1G	2X	3000/Tape&Reel
MBT4401WT3G	2X	10000/Tape&Reel



3. MAXIMUM RATINGS(Ta = 25ºC)

Parameter	Symbol	Limits	Unit
Collector–Emitter Voltage	VCEO	40	V
Collector–Base Voltage	VCBO	60	V
Emitter–Base Voltage	VEBO	6	V
Collector Current — Continuous	IC	600	mA

4. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Total Device Dissipation, FR−5 Board (Note 1) @ TA = 25ºC	PD	150	mW
Thermal Resistance, Junction–to–Ambient(Note 1)	RΘJA	833	ºC/W
Junction and Storage temperature	TJ,Tstg	−55~+150	° C

1. FR–5 = 1.0×0.75×0.062 in.

5. ELECTRICAL CHARACTERISTICS (Ta= 25ºC)

OFF CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Collector–Emitter Breakdown Voltage (IC = 1.0 mA, IB = 0)	VBR(CEO)	40	-	-	V
Collector–Base Breakdown Voltage (IC = 0.1 mA, IE = 0)	VBR(CBO)	60	-	-	V
Emitter–Base Breakdown Voltage (IE = 0.1 mA, IC = 0)	VBR(EBO)	6	-	-	V
Collector Cutoff Current (VCE = 35 V, VEB = 0.4V)	ICEX	-	-	0.1	μA
Base Cutoff Current (VCE = 35 V, VEB = 0.4V)	IBEV	-	-	0.1	μA

5. ELECTRICAL CHARACTERISTICS (Ta= 25°C)(Con.)

ON CHARACTERISTICS (Note 2.)

DC Current Gain (IC = 0.1 mA, VCE = 1.0 V) (IC = 1.0 mA, VCE = 1.0 V) (IC = 10 mA, VCE = 1.0 V) (IC = 150 mA, VCE = 1.0 V) (IC = 500 mA, VCE = 2.0 V)	HFE	 20 40 80 100 40	 - - - - -	 - - - 300 -	
Collector–Emitter Saturation Voltage (IC = 150 mA, IB = 15 mA) (IC = 500 mA, IB = 50 mA)	VCE(sat)	 - -	 - -	 0.4 0.75	V
Base–Emitter Saturation Voltage (IC = 150 mA, IB = 15 mA) (IC = 500 mA, IB = 50 mA)	VBE(sat)	 0.75 -	 - -	 0.95 1.2	V

SMALL–SIGNAL CHARACTERISTICS

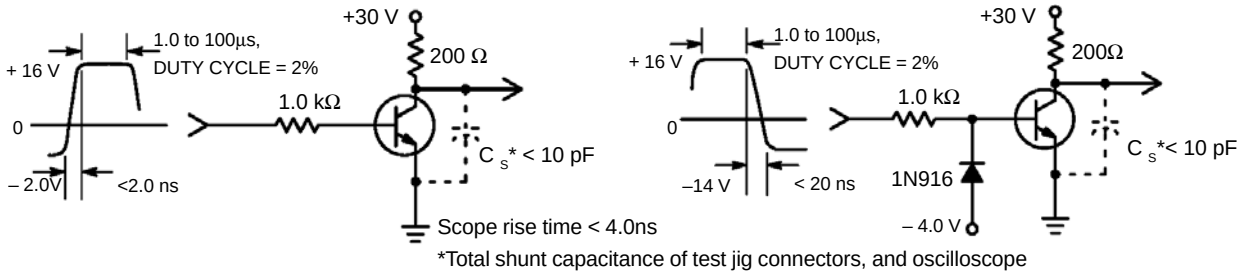
Current–Gain — Bandwidth Product (IC = 20mA, VCE= 10V, f = 100MHz)	fT	250	-	-	MHz
Collector–Base Capacitance (VCB = 5.0 V, IE = 0, f = 1.0 MHz)	Ccb	-	-	6.5	pF
Emitter–Base Capacitance (VEB = 0.5 V, IC = 0, f = 1.0 MHz)	Ceb	-	-	30	pF
Input Impedance (VCE = 10 V, IC = 1.0 mA, f = 1.0 kHz)	hie	1	-	15	KΩ
Voltage Feedback Ratio (VCE = 10 V, IC = 1.0 mA, f = 1.0 kHz)	hre	0.1	-	8	$X10^{-4}$
Small–Signal Current Gain (VCE = 10 V, IC = 1.0 mA, f = 1.0 kHz)	hfe	40	-	500	
Output Admittance (VCE = 10 V, IC = 1.0 mA, f = 1.0 kHz)	hoe	1	-	30	μmhos

SWITCHING CHARACTERISTICS

Delay Time	(VCC = 30 V, VEB=2.0V,IC = 150 mA, IB1 = 15 mA)	td	-	-	15	ns
Rise Time		tr	-	-	20	
Storage Time	(VCC = 30 V, IC =150 mA,IB1 = IB2 =15 mA)	ts	-	-	225	
Fall Time		tf	-	-	30	

2.Pulse Test: Pulse Width ≤300 μs, Duty Cycle ≤2.0%.

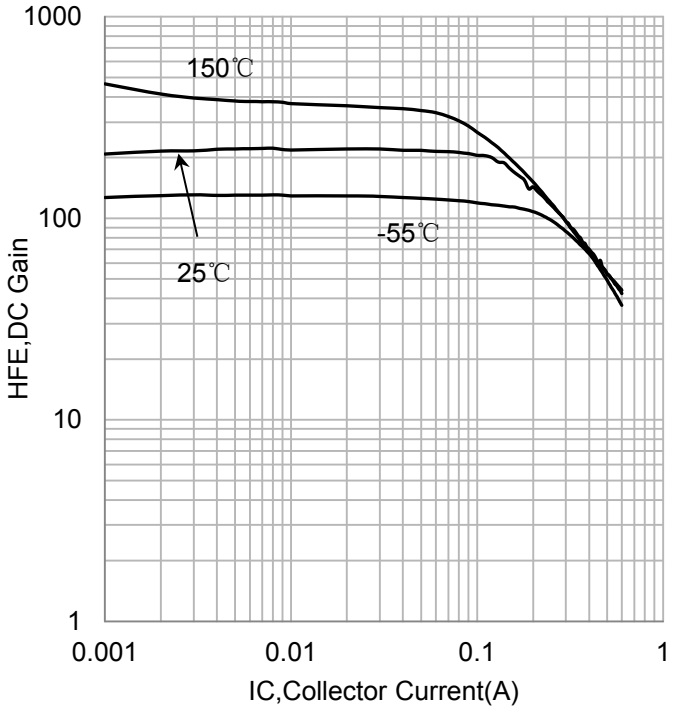
SWITCHING TIME EQUIVALENT TEST CIRCUITS



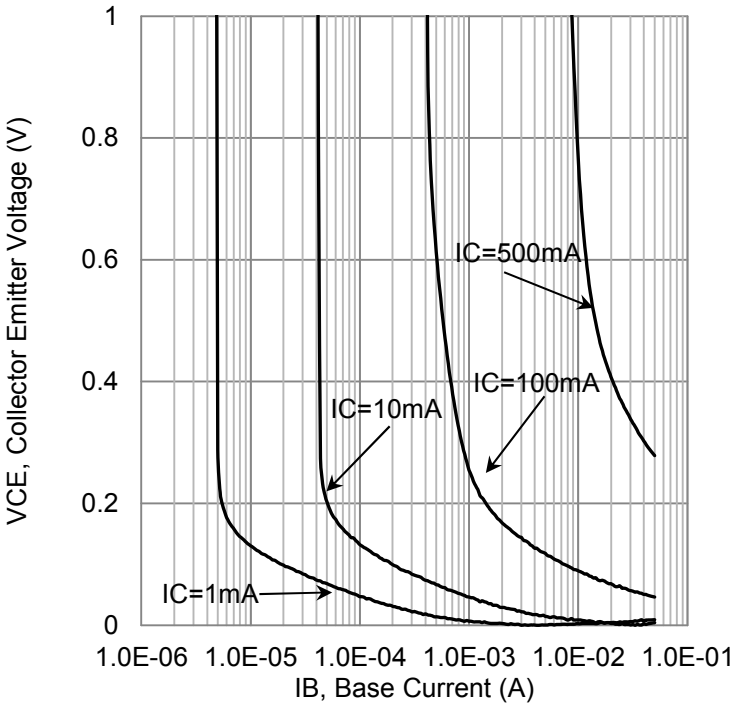
*Total shunt capacitance of test jig connectors, and oscilloscope

Turn–On Time **Turn–Off Time**

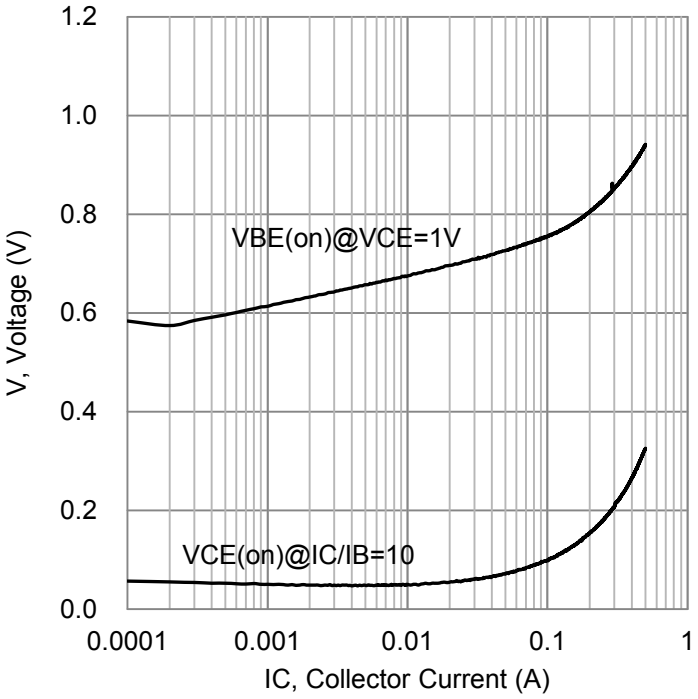
6.ELECTRICAL CHARACTERISTICS CURVES



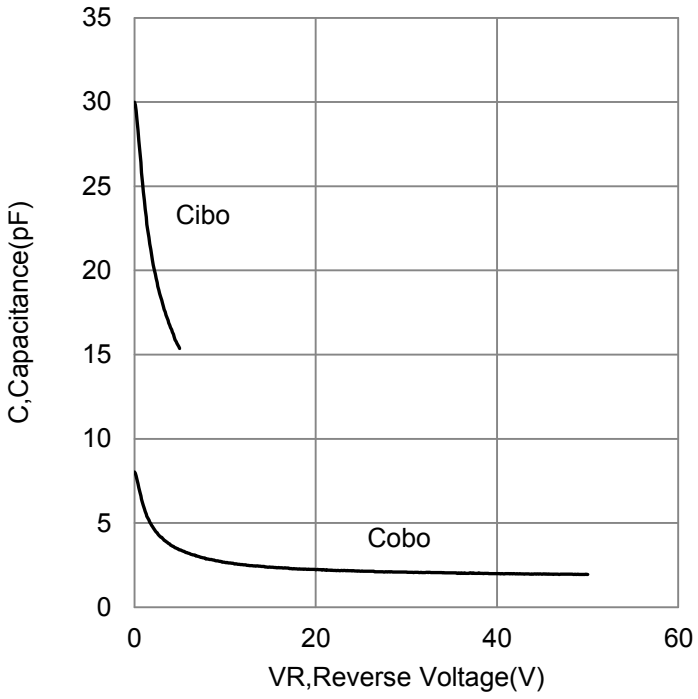
DC Current Gain



Collector Saturation Region

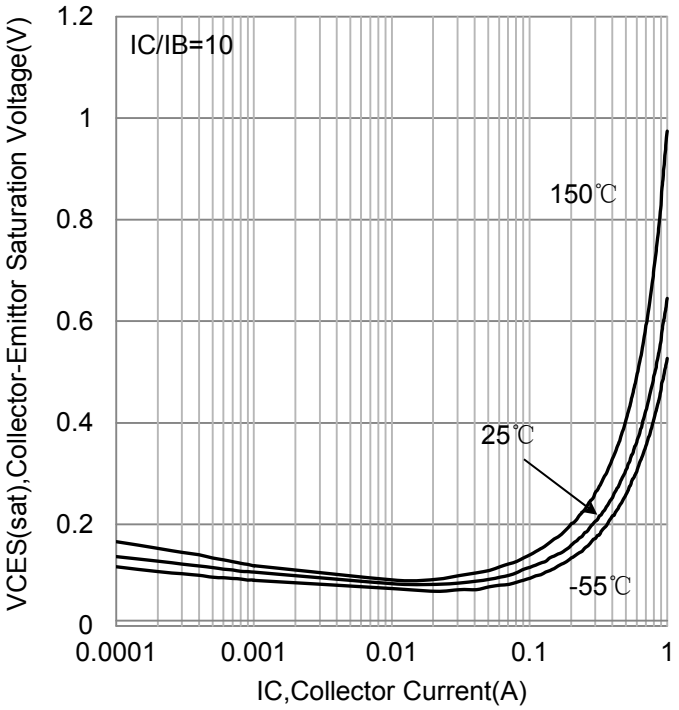


"On" Voltage

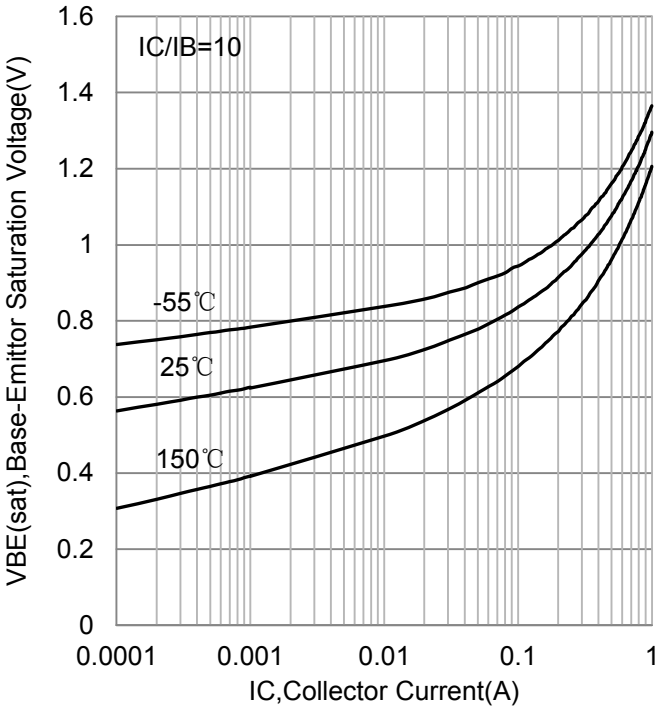


Capacitance

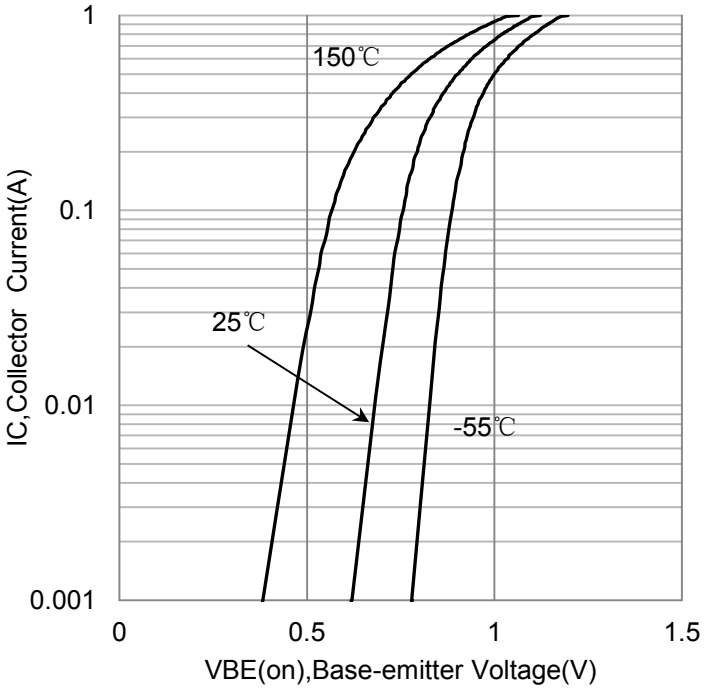
6.ELECTRICAL CHARACTERISTICS CURVES(Con.)



VCE(sat) vs. IC

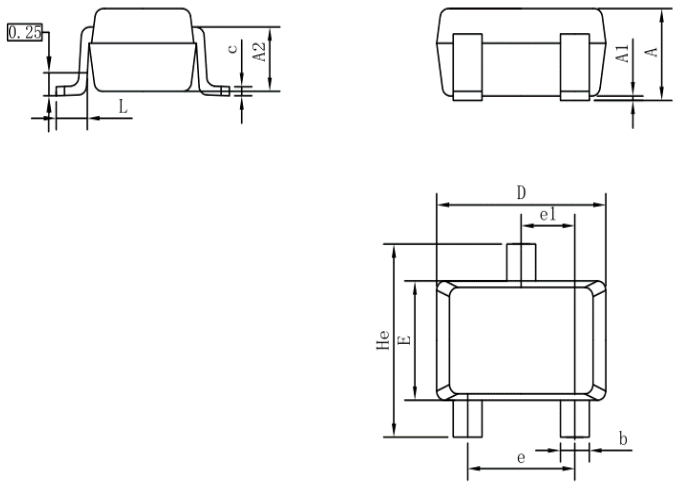


VBE(sat) vs. IC



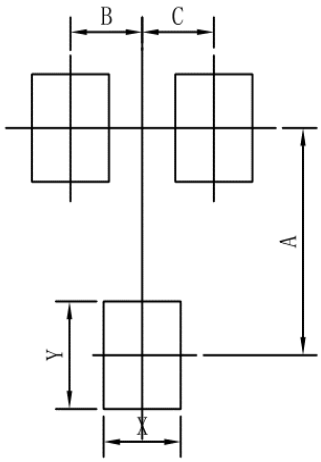
IC vs. VBE(on)

7.OUTLINE AND DIMENSIONS



SC70			
DIM	MIN	NOR	MAX
A	0.80	0.95	1.00
A1	0.00	0.05	0.10
A2		0.7 REF	
b	0.30	0.35	0.40
c	0.10	0.15	0.25
D	1.80	2.05	2.20
E	1.15	1.30	1.35
e	1.20	1.30	1.40
e1		0.65 BSC	
L	0.20	0.35	0.56
He	2.00	2.10	2.40
ALL Dimension in mm			

8.SOLDERING FOOTPRINT



SC70	
DIM	MIN
A	1.90
B	0.65
C	0.65
X	0.70
Y	0.90