Ordering number : ENA1758

SANYO Semiconductors
DATA SHEET

ECH8502 — PNP/NPN Epitaxial Planar Silicon Transistors Gate Drive Applications

Features

- Composite type, facilitating high-density mounting
- Mounting height 0.9mm
- Low collector-to-emitter saturation voltage NPN : $V_{CE}(sat)$=0.08V(typ.)@I_C=2.5A
  PNP : $V_{CE}(sat)$= –0.12V(typ.)@I_C= –2.5A
- Halogen free compliance

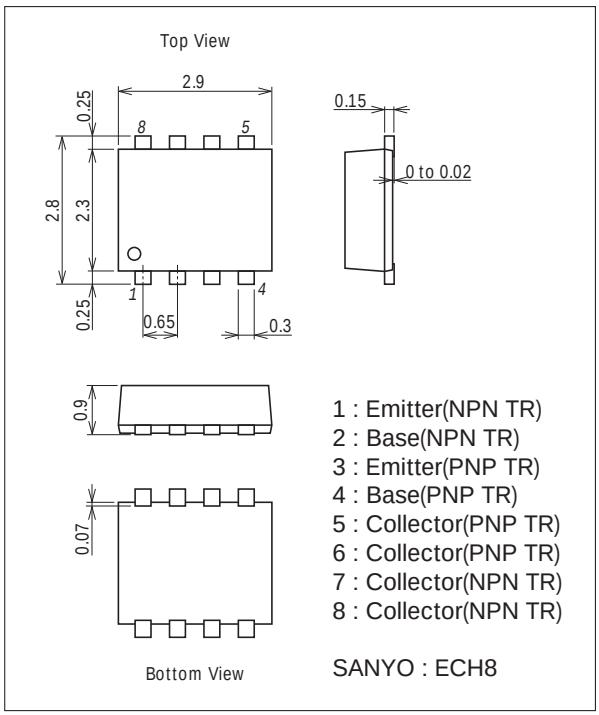
Specifications ( ): PNP

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–50)100	V
Collector-to-Emitter Voltage	V_{CEO}		(–)50	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	V
Collector Current	I_C		(–)5	A
Collector Current (Pulse)	I_{CP}	PW≤1μs, duty cycle≤1%	(–)30	A
Base Current	I_B		(–)600	mA
Collector Dissipation	P_C	When mounted on ceramic substrate (900mm²×0.8mm) 1unit	1.3	W
Total Dissipation	P_T	When mounted on ceramic substrate (900mm²×0.8mm)	1.6	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		–55 to +150	°C

Package Dimensions

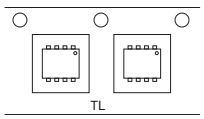
unit : mm (typ)
7011A-007



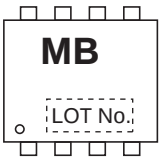
Product & Package Information

- Package : ECH8
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

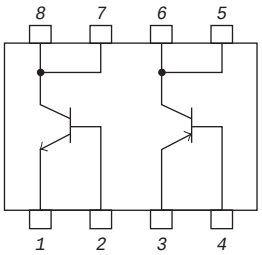
Packing Type : TL



Marking



Electrical Connection

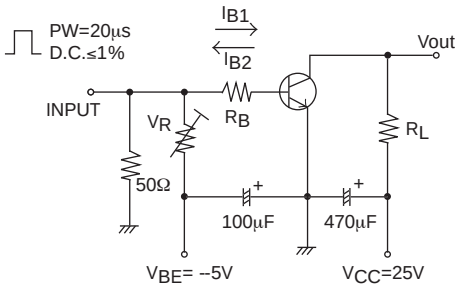


Electrical Characteristics at Ta=25°C

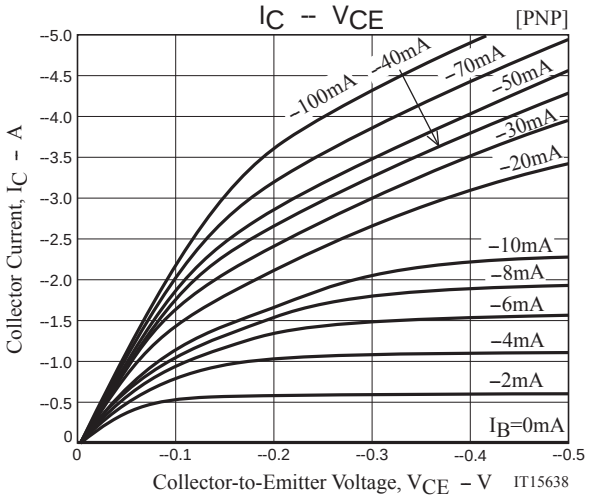
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(−)50V, I_E=0A			(−)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(−)4V, I_C=0A			(−)0.1	μA
DC Current Gain	h_{FE}	V_{CE}=(−)2V, I_C=(−)500mA	200		560	
Gain-Bandwidth Product	f_T	V_{CE}=(−)10V, I_C=(−)500mA		(260)290		MHz
Output Capacitance	Cob	V_{CB}=(−)10V, f=1MHz		(45)25		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(−)2.5A, I_B=(−)125mA		(−120)80	(−200)120	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(−)2.5A, I_B=(−)125mA		(−)0.85	(−)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(−)10μA, I_E=0A	(−50)100			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(−)1mA, R_{BE}=∞	(−)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(−)10μA, I_C=0A	(−)6			V
Turn-On Time	t_{on}	See specified Test Circuit.		(30)30		ns
Storage Time	t_{stg}	See specified Test Circuit.		(180)280		ns
Fall Time	t_f	See specified Test Circuit.		(20)25		ns

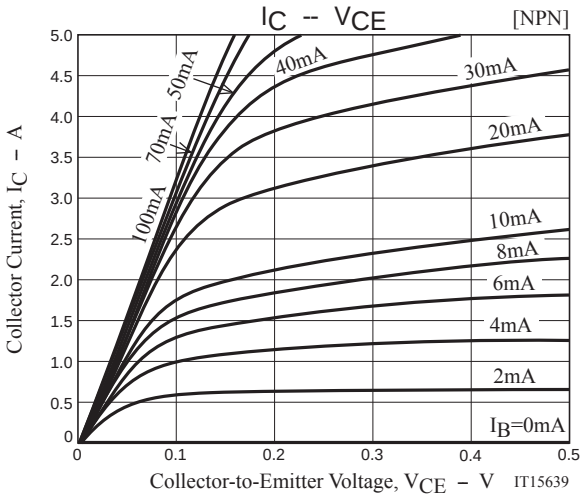
Note : The specifications shown above are for each individual transistor.

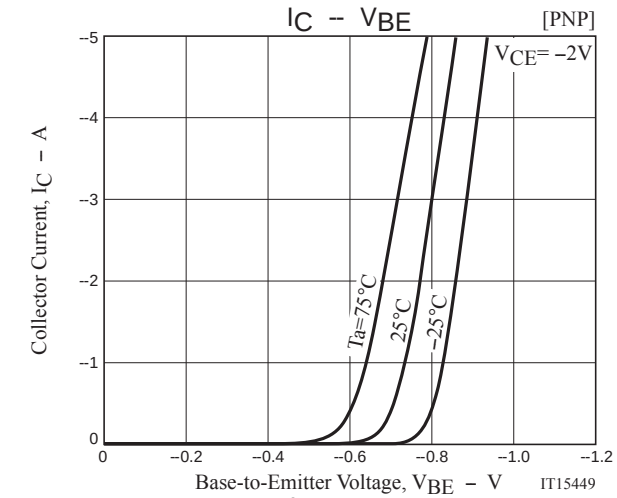
Switching Time Test Circuit

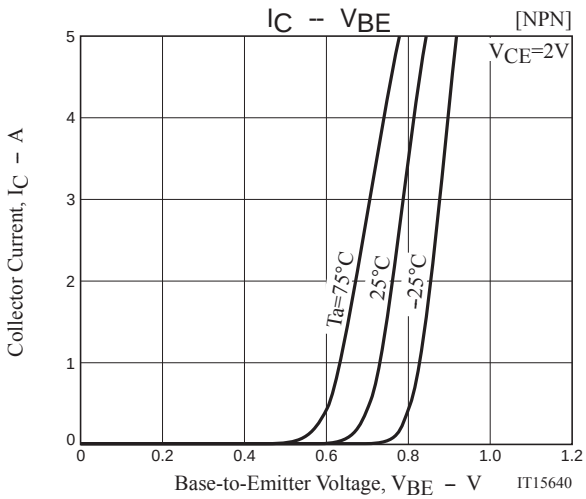


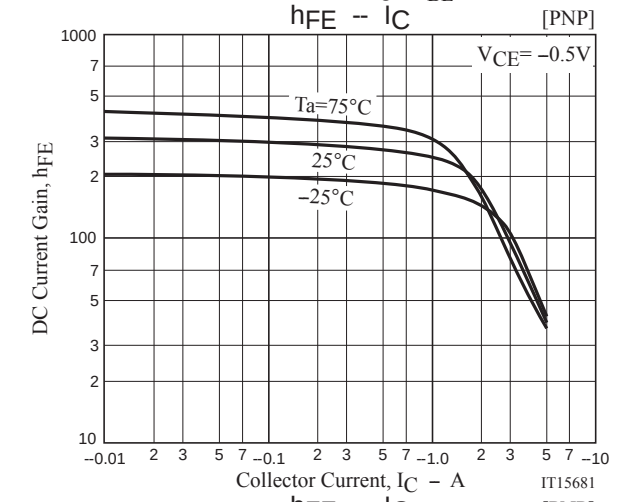
I_C=20I_{B1}= −20I_{B2}=2.5A
(For PNP, the polarity is reversed.)

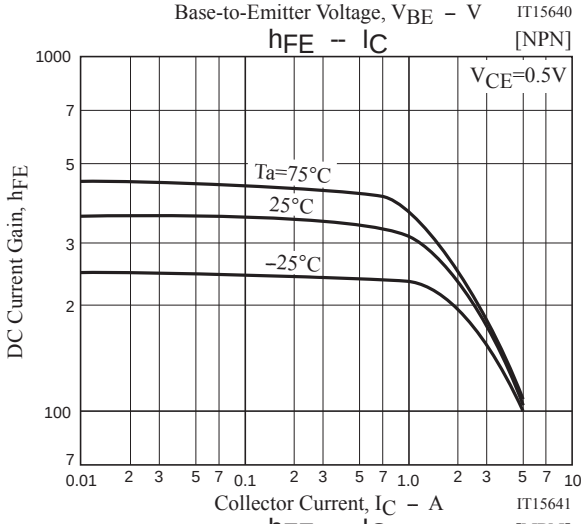


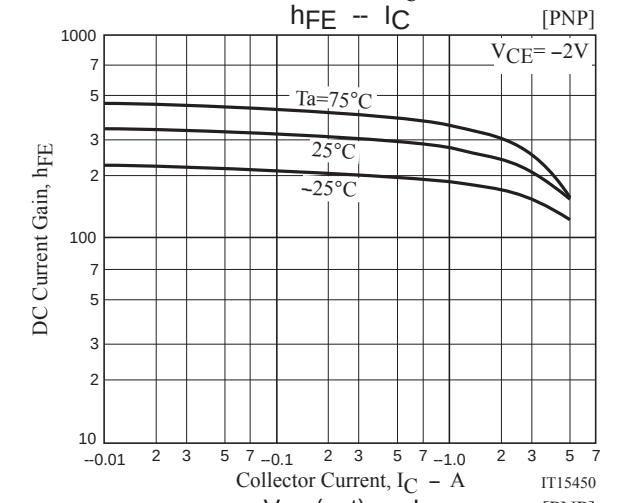


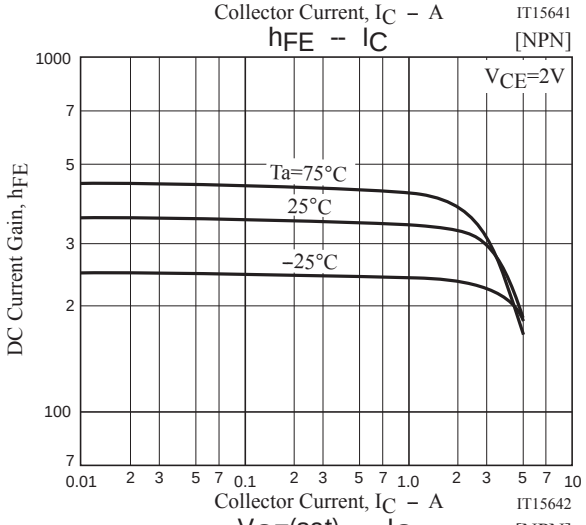

IC – VBE
[PNP]
VCE= –2V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT15449

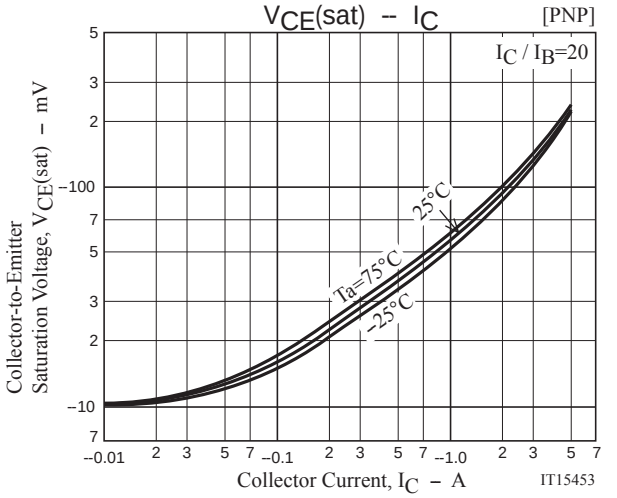

IC – VBE
[NPN]
VCE=2V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT15640

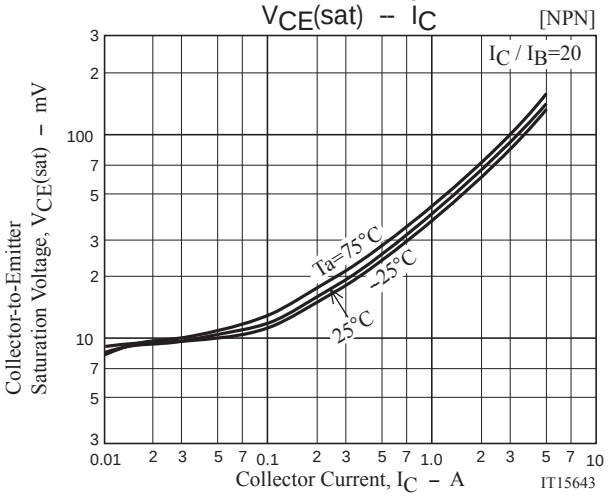

hFE – IC
[PNP]
VCE= –0.5V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT15681

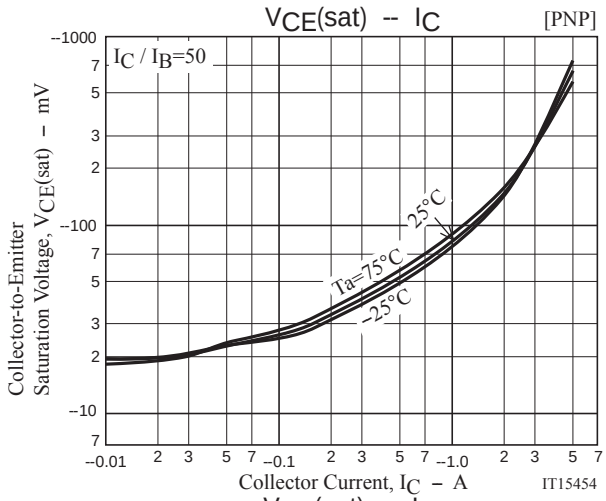

hFE – IC
[NPN]
VCE=0.5V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT15641

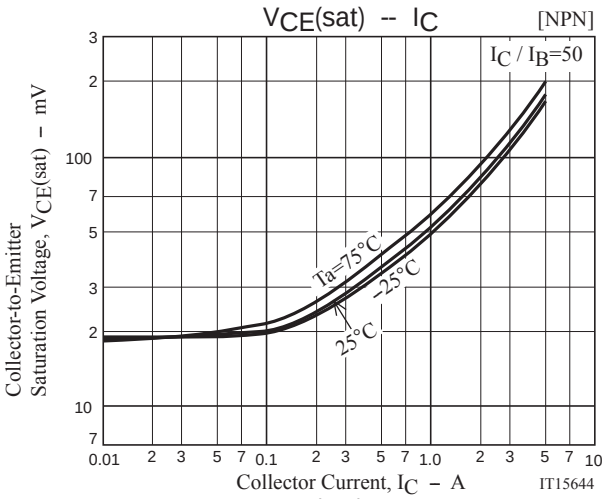

hFE – IC
[PNP]
VCE= –2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT15450

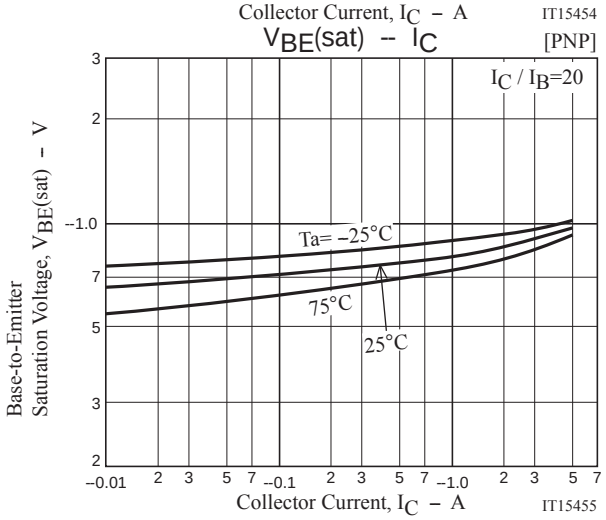

hFE – IC
[NPN]
VCE=2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT15642

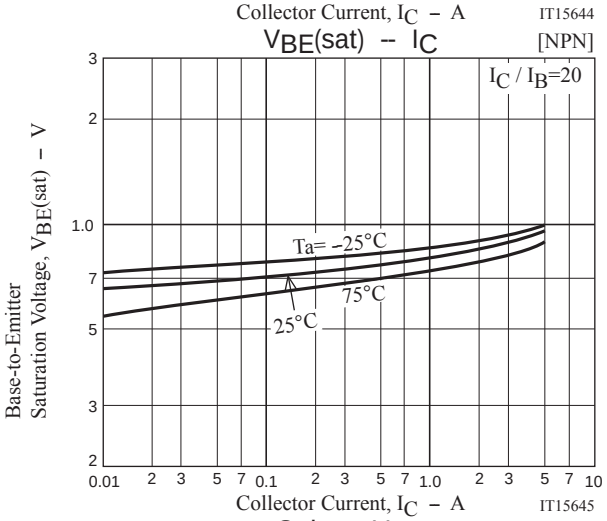

VCE(sat) – IC
[PNP]
IC / IB=20
25°C
Ta=75°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT15453

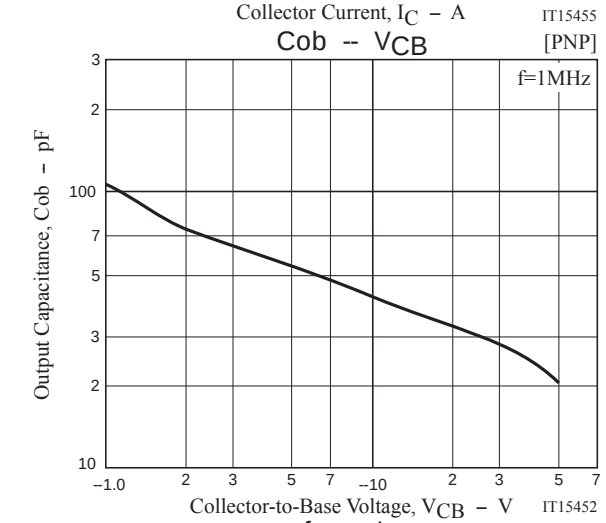

VCE(sat) – IC
[NPN]
IC / IB=20
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT15643

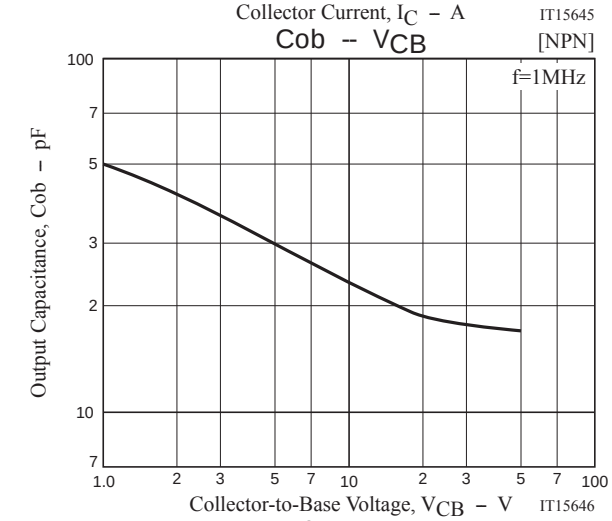

VCE(sat) -- IC
[PNP]
IC / IB=50
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT15454

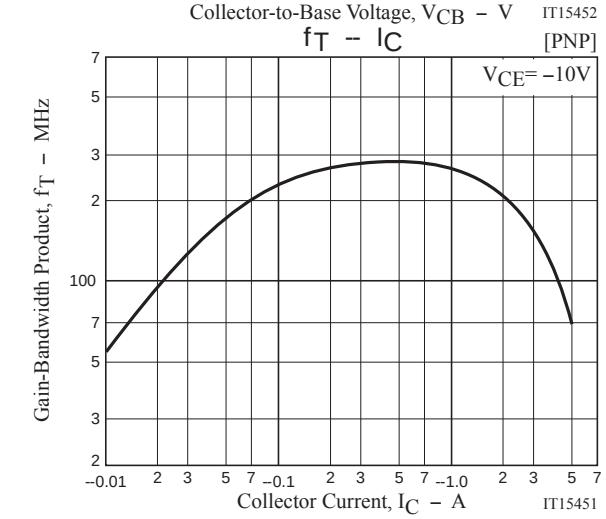

VCE(sat) -- IC
[NPN]
IC / IB=50
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT15644

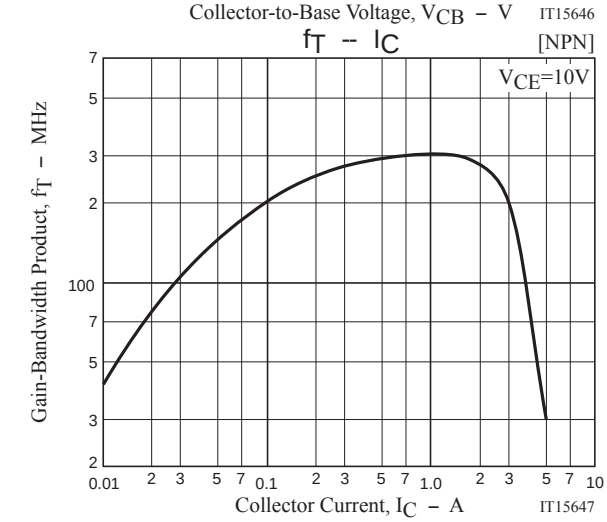

VBE(sat) -- IC
[PNP]
IC / IB=20
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT15455


VBE(sat) -- IC
[NPN]
IC / IB=20
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT15645


Cob -- VCB
[PNP]
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT15452


Cob -- VCB
[NPN]
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT15646


fT -- IC
[PNP]
VCE= –10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT15451


fT -- IC
[NPN]
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT15647