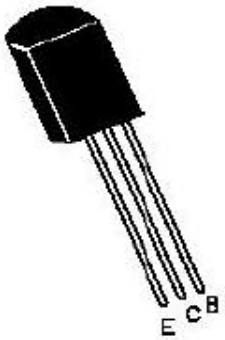
Continental Device India Limited

An ISO/TS 16949, ISO 9001 and ISO 14001 Certified Company

NPN EPITAXIAL TRANSISTOR

CSC458



TO-92
Plastic Package

Applications :
Low Frequency Amplifier
Medium Speed Switching

ABSOLUTE MAXIMUM RATINGS (T_a=25ºC unless specified otherwise)

DESCRIPTION	SYMBOL	VALUE	UNITS
Collector Base Voltage	V_{CBO}	30	V
Collector Emitter Voltage	V_{CEO}	30	V
Emitter Base Voltage	V_{EBO}	5	V
Collector Current	I_C	100	mA
Emitter Current	I_E	100	
Collector Power Dissipation	P_C	200	mW
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS (T_a=25ºC unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 10µA, I_E = 0	30			V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA, R_{BE} = α	30			V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10µA, I_C = 0	5			V
Collector Cut-Off Current	I_{CBO}	V_{CB} = 18V, I_E = 0			0.5	µA
Emitter Cut-Off Current	I_{EBO}	V_{EB} = 4V, I_C = 0			1	µA
DC Current Gain	h_{FE}	V_{CE} = 1V, I_C = 10mA	100		500	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 10mA, I_B = 1mA			0.4	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 10mA, I_B = 1mA			1	V
Gain Bandwidth Product	f_T	V_{CE} = 10V, I_C = 10mA	100			MHz
Collector Output Capacitance	C_{ob}	V_{CB} = 10V, I_E = 0, f=1MHz			4	pF
Turn - On Time	t_{on}	I_C = 10I_{B1} = -10I_{B2} = 10mA, V_{CC} = 10V		80		ns
Turn - Off Time	t_{off}			300		ns
Storage Time	t_{stg}	I_C = I_{B1} = -I_{B2} = 20mA, V_{CC} = 5V		260		ns

Small Signal h Parameters

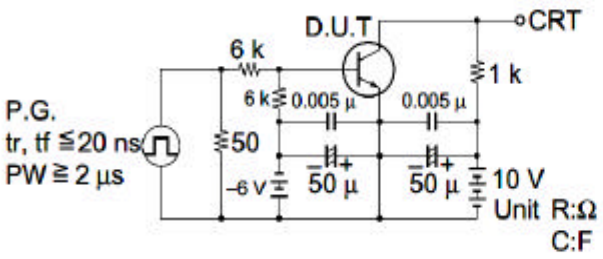
DESCRIPTION	SYMBOL	TEST CONDITION	TYP	UNIT
Input Impedance	h_{ie}	V_{CE} = 5V,	16.5	kΩ
Voltage Feedback Ratio	h_{re}	I_C = 0.1mA,	70	x 10^{-6}
Current Transfer Ratio	h_{fe}	f = 270 Hz	130	
Output Admittance	h_{oe}		11	µS

Classification of h_{FE}

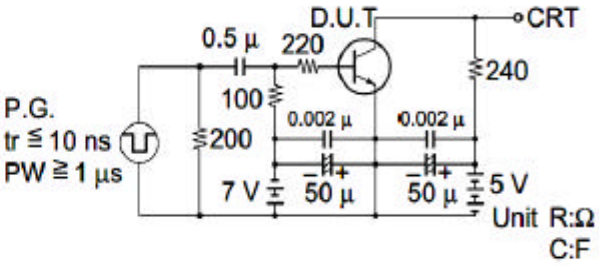
Rank	B	C	D
Range	100-200	160-320	250-500

Test Circuit

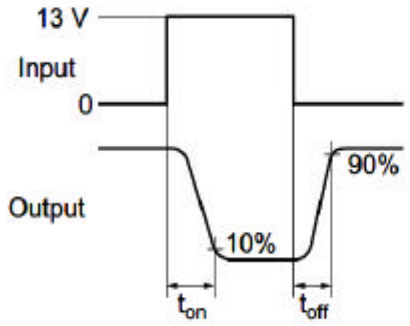
Switching Time Test Circuit
t_{on}, t_{off} Test Circuit



Switching Time Test Circuit
t_{stg} Test Circuit

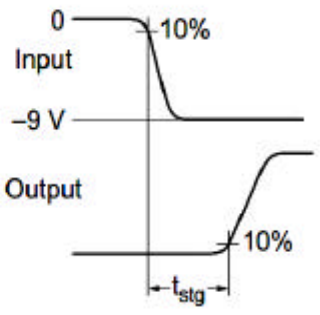


Response Waveform



I_C	I_{B1}	I_{B2}	V_{CC}	V_{BB}	V_{in}
10 mA	1 mA	–1 mA	10 V	–6 V	13 V

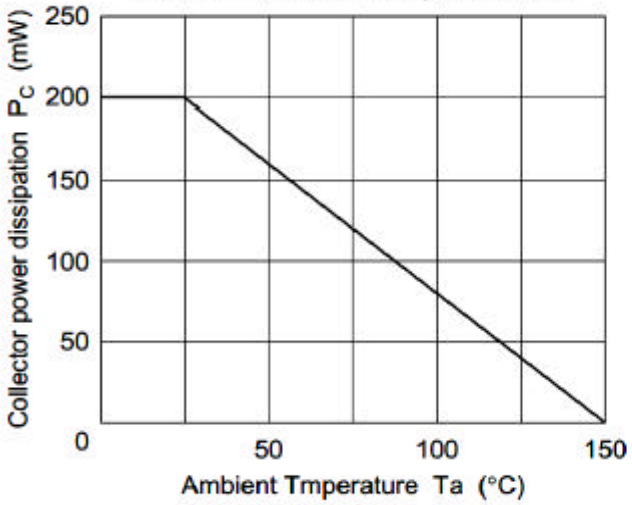
Response Waveform



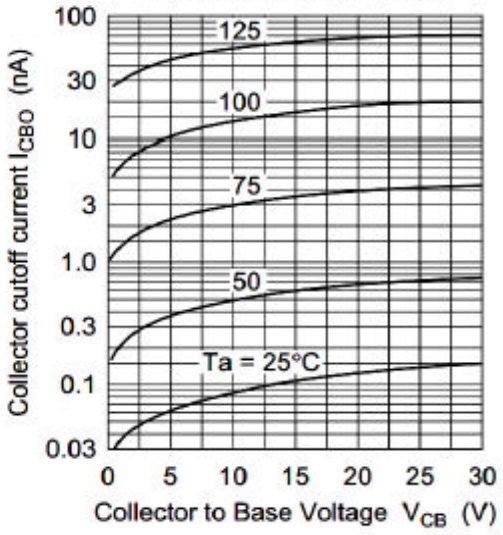
I_C	I_{B1}	I_{B2}	V_{CC}	V_{BB}	V_{in}
20 mA	20 mA	–20 mA	5 V	7 V	–9 V

TYPICAL CHARACTERISTICS CURVES

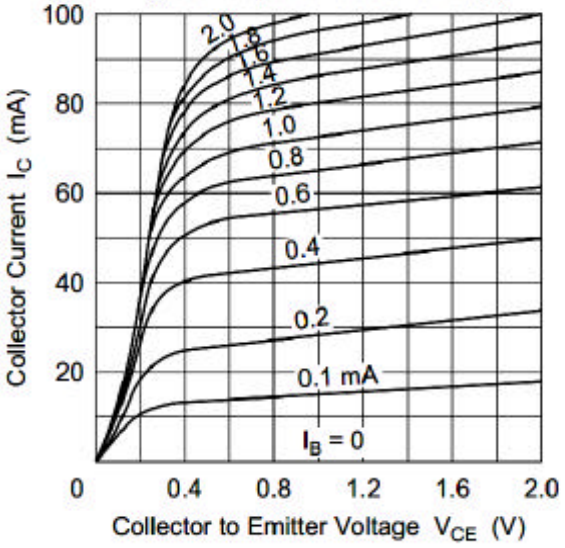
Maximum Collector Dissipation Curve



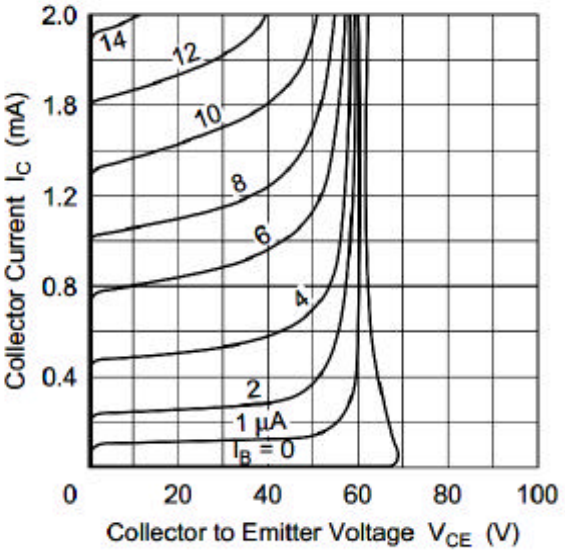
Collector Cutoff Current vs. Collector to Base Voltage



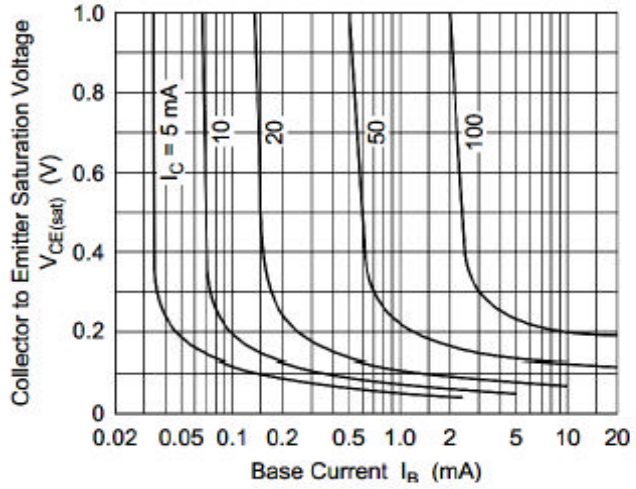
Typical Output Characteristics (1)



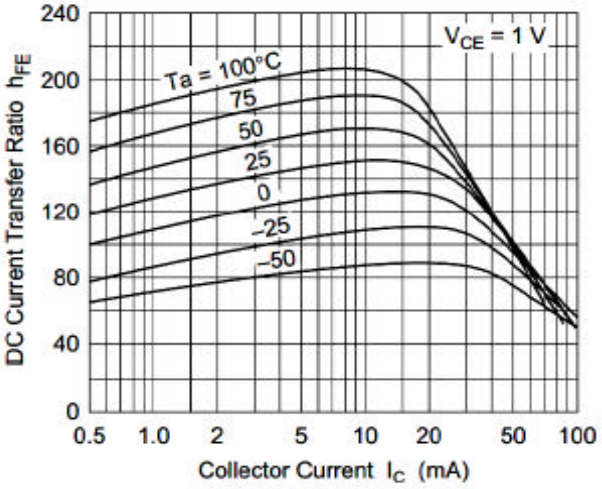
Typical Output Characteristics (2)



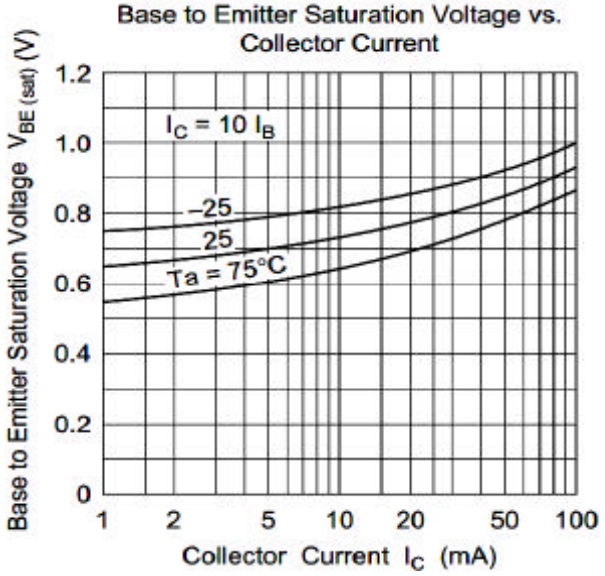
Collector to Emitter Saturation Voltage vs. Base Current



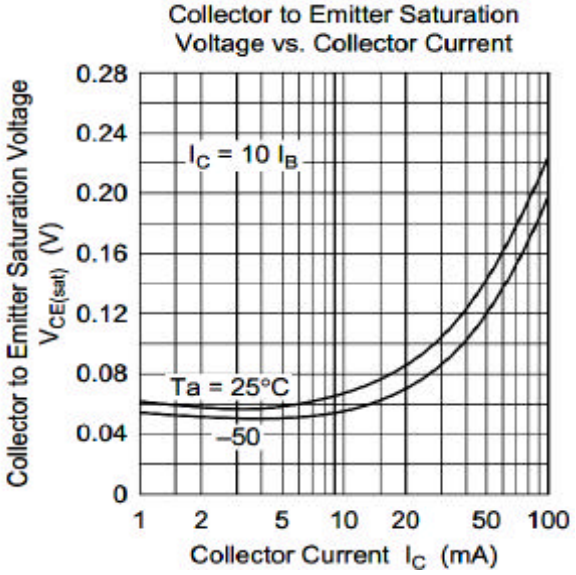
DC Current Transfer Ratio vs. Collector Current



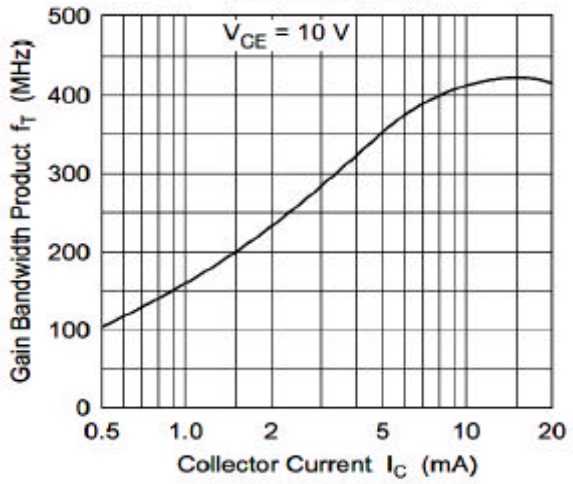
Base to Emitter Saturation Voltage vs. Collector Current



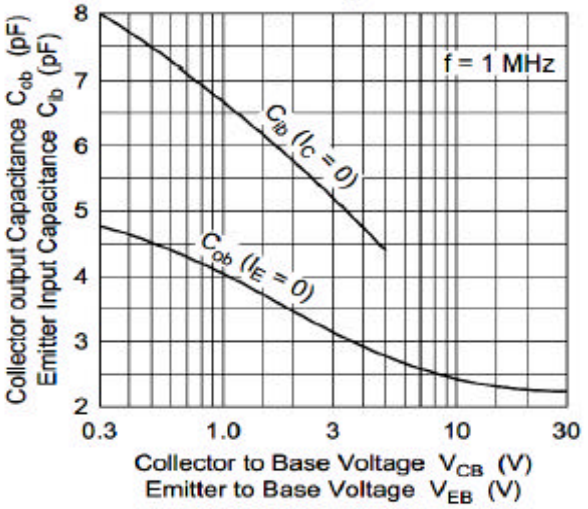
Collector to Emitter Saturation Voltage vs. Collector Current



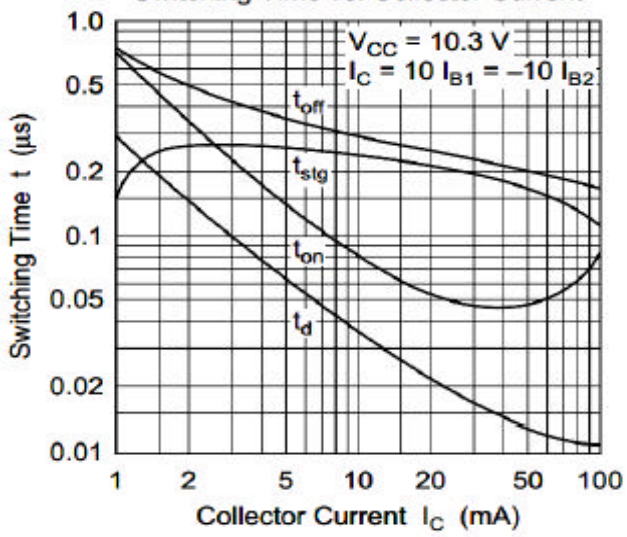
Gain Bandwidth Product vs. Collector Current



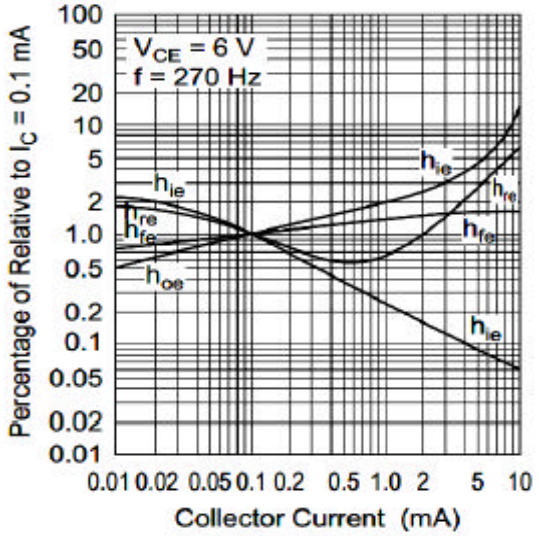
Input and Output Capacitance vs. Voltage

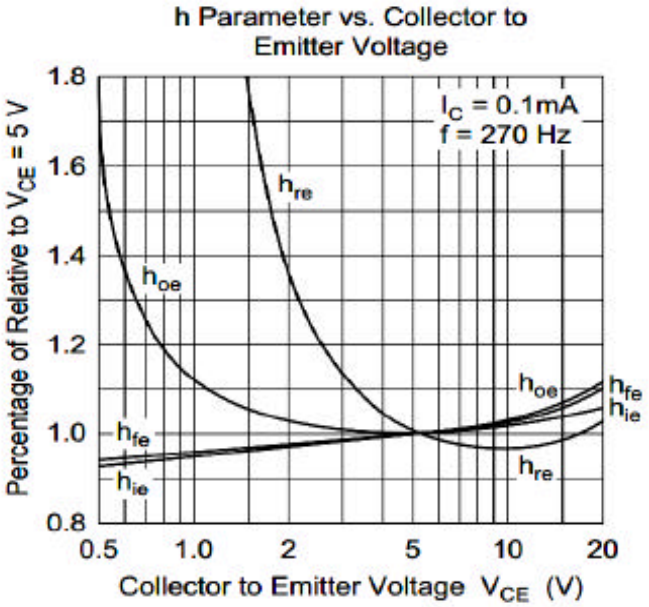


Switching Time vs. Collector Current

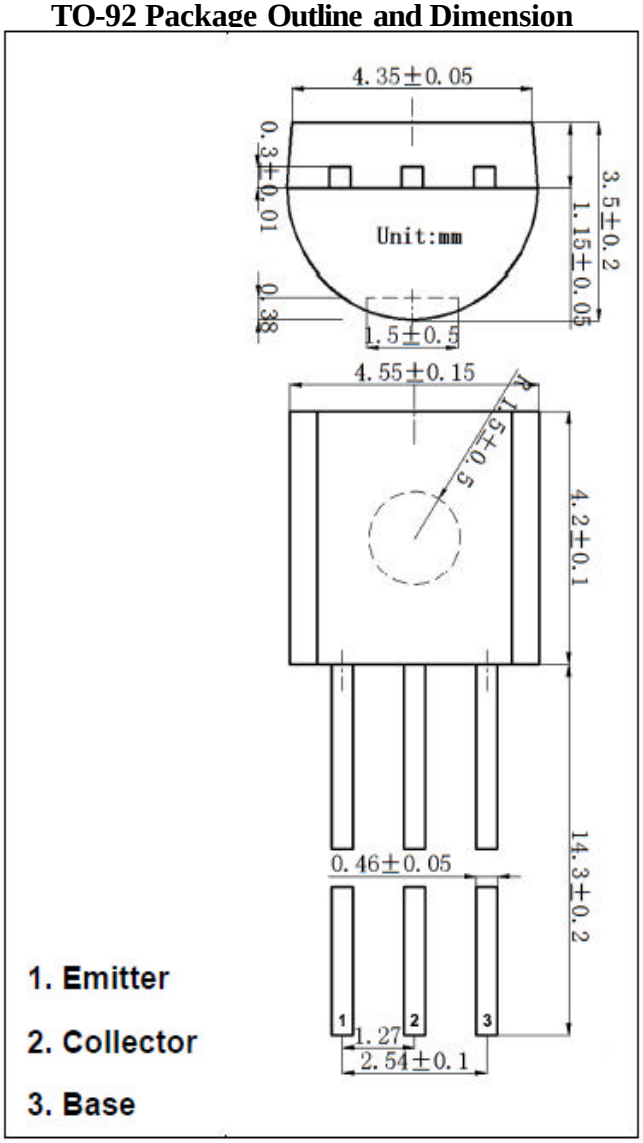


h Parameter vs. Collector Current





TO-92 Package Outline and Dimension



Disclaimer

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