

ELECTRICAL CHARACTERISTICS

characteristics specified at $T_A = 25^\circ\text{C}$

Off Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 30\text{ mA}$	80			Volts
Collector-Base Cutoff Current	I_{CBO1}	$V_{CB} = 140\text{ Volts}$			10	μA
Collector-Emitter Cutoff Current	I_{CES1}	$V_{CE} = 90\text{ Volts}$			10	nA
Collector-Emitter Cutoff Current	I_{CES2}	$V_{CE} = 90\text{ Volts}, T_A = 150^\circ\text{C}$			10	μA
Emitter-Base Cutoff Current	I_{EBO1}	$V_{EB} = 7\text{ Volts}$			10	μA
Emitter-Base Cutoff Current	I_{EBO2}	$V_{EB} = 5\text{ Volts}$			10	nA

On Characteristics

Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
DC Current Gain	h_{FE1}	$I_C = 150\text{ mA}, V_{CE} = 10\text{ Volts}$	100		300	
	h_{FE2}	$I_C = 0.1\text{ mA}, V_{CE} = 10\text{ Volts}$	50		200	
	h_{FE3}	$I_C = 10\text{ mA}, V_{CE} = 10\text{ Volts}$	90			
	h_{FE4}	$I_C = 500\text{ mA}, V_{CE} = 10\text{ Volts}$	50		200	
	h_{FE5}	$I_C = 1\text{ A}, V_{CE} = 10\text{ Volts}$	15			
	h_{FE6}	$I_C = 150\text{ mA}, V_{CE} = 10\text{ Volts}$ $T_A = -55^\circ\text{C}$	40			
Base-Emitter Saturation Voltage	V_{BEsat}	$I_C = 150\text{ mA}, I_B = 15\text{ mA}$			1.1	Volts
Collector-Emitter Saturation Voltage	V_{CEsat1}	$I_C = 150\text{ mA}, I_B = 15\text{ mA}$			0.2	Volts
	V_{CEsat2}	$I_C = 500\text{ mA}, I_B = 50\text{ mA}$			0.5	Volts

Small Signal Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio	$ h_{FE} $	$V_{CE} = 10\text{ Volts}, I_C = 50\text{ mA}, f = 20\text{ MHz}$	5		20	
Small Signal Short Circuit Forward Current Transfer Ratio	h_{FE}	$V_{CE} = 5\text{ Volts}, I_C = 1\text{ mA}, f = 1\text{ kHz}$	80		400	
Open Circuit Output Capacitance	C_{OBO}	$V_{CB} = 10\text{ Volts}, I_E = 0\text{ mA}, 100\text{ kHz} < f < 1\text{ MHz}$			12	pF
Open Circuit Input Capacitance	C_{IBO}	$V_{EB} = 0.5\text{ Volts}, I_C = 0\text{ mA}, 100\text{ kHz} < f < 1\text{ MHz}$			60	pF
Collector Base time constant	$r_b'C_C$	$V_{CB} = 10\text{ Volts}, I_E = 10\text{ mA}, f = 79.8\text{ MHz}$			400	ps
Noise Figure	NF	$V_{CE} = 10\text{ Volts}, I_C = 100\text{ }\mu\text{A}, f = 200\text{ Hz}, R_g = 1\text{ k}\Omega$			4	dB

Switching Characteristics

Saturated Turn-On Time	$t_{ON} + t_{OFF}$				30	ns
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