



**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)CBO}^*$	Collector – Base Breakdown Voltage	$I_C = 10\mu\text{A}$	$I_E = 0$	-12	
$V_{(BR)CEO}$	Collector – Emitter Breakdown Voltage	$I_C = 10\text{mA}$	$I_B = 0$	-12	V
$V_{(BR)EBO}$	Emitter – Base Breakdown Voltage	$I_E = 10\mu\text{A}$	$I_C = 0$	-4	
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = -6\text{V}$	$T_{amb} = 125^\circ\text{C}$		-10 $\mu\text{A}$
$I_{CES}$	Collector Cut-off Current	$V_{BE} = 0$	$V_{CE} = -6\text{V}$		-80 nA
$V_{CE(sat)}$	Collector – Emitter Saturation Voltage	$I_C = -10\text{mA}$	$I_B = -1\text{mA}$		-0.15
		$I_C = -30\text{mA}$	$I_B = -3\text{mA}$		-0.20
		$I_C = -100\text{mA}$	$I_B = -10\text{mA}$		-0.50
$V_{BE(sat)}$	Base – Emitter On Voltage	$I_C = -10\text{mA}$	$I_B = -1\text{mA}$	-0.78	-0.98
		$I_C = -30\text{mA}$	$I_B = -3\text{mA}$	-0.85	-1.2
		$I_C = -100\text{mA}$	$I_B = -10\text{mA}$		-1.7
$h_{FE}$	DC Current Gain	$I_C = -10\text{mA}$	$V_{CE} = -0.3\text{V}$	30	
		$I_C = -30\text{mA}$	$V_{CE} = -0.5\text{V}$	40	150
		$I_C = -100\text{mA}$	$V_{CE} = -1\text{V}$	25	
		$I_C = -30\text{mA}$	$V_{CE} = -0.5\text{V}$ $T_{amb} = 125^\circ\text{C}$	17	
$f_T$	Current Gain Bandwidth Product	$V_{CE} = -10\text{V}$ $I_C = -30\text{mA}$	$f = 100\text{MHz}$	400	MHz
$C_{ebo}$	Emitter – Base – Capacitance	$V_{EB} = -5\text{V}$ $f = 1\text{MHz}$	$I_C = 0$		6 pF
$C_{cbo}$	Collector – Base – Capacitance	$V_{CB} = -5\text{V}$ $f = 1\text{MHz}$	$I_C = 0$		6 pF
$t_{on}$	Turn on Time	$I_C = -30\text{mA}$ $I_{B2} = -1.5\text{mA}$	$V_{CE} = -2\text{V}$		60 ns
$t_{off}$	Turn off Time	$I_C = -30\text{mA}$ $I_{B1} = I_{B2} = -1.5\text{mA}$	$V_{CE} = -2\text{V}$		9 ns

\* Pulse Test:  $t_p \leq 300\mu\text{s}$ ,  $\delta \leq 2\%$ .