

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector - Emitter Sustaining Voltage ($I_C = 250\text{ mA}, I_B = 0, V_{\text{clamp}} = \text{Rate } V_{\text{CEO}}$)	MJ10002 MJ10003	$V_{\text{CEO(SUS)}}$	350 400	V
Collector Cutoff Current ($V_{\text{CE}} = \text{Rated } V_{\text{CEV}}, R_{\text{BE}} = 50\text{ ohm}, T_C = 100^\circ\text{C}$)		I_{CER}	5.0	mA
Collector Cutoff Current ($V_{\text{CEV}} = \text{Rated Value}, V_{\text{BE(OFF)}} = 1.5\text{ V}$) ($V_{\text{CEV}} = \text{Rated Value}, V_{\text{BE(OFF)}} = 1.5\text{ V}, T_C = 100^\circ\text{C}$)		I_{CEV}	0.25 5.0	mA
Emitter Cutoff Current ($V_{\text{EB}} = 8.0\text{ V}, I_C = 0$)		I_{EBO}	175	mA

ON CHARACTERISTICS (1)

DC Current Gain ($I_C = 2.5\text{ A}, V_{\text{CE}} = 5.0\text{ V}$) ($I_C = 5.0\text{ A}, V_{\text{CE}} = 5.0\text{ V}$)		hFE	40 30	500 300	
Collector - Emitter Saturation Voltage ($I_C = 5.0\text{ A}, I_B = 250\text{ mA}$) ($I_C = 10\text{ A}, I_B = 1.0\text{ A}$) ($I_C = 5.0\text{ A}, I_B = 250\text{ mA}, T_C = 100^\circ\text{C}$)		$V_{\text{CE(sat)}}$		1.9 2.9 2.0	V
Base - Emitter Saturation Voltage ($I_C = 5.0\text{ A}, I_B = 250\text{ mA}$) ($I_C = 5.0\text{ A}, I_B = 250\text{ mA}, T_C = 100^\circ\text{C}$)		$V_{\text{BE(sat)}}$		2.5 2.5	V
Diode Forward Voltage ($I_F = 5.0\text{ A}$)		V_F		5.0	V

DYNAMIC CHARACTERISTICS

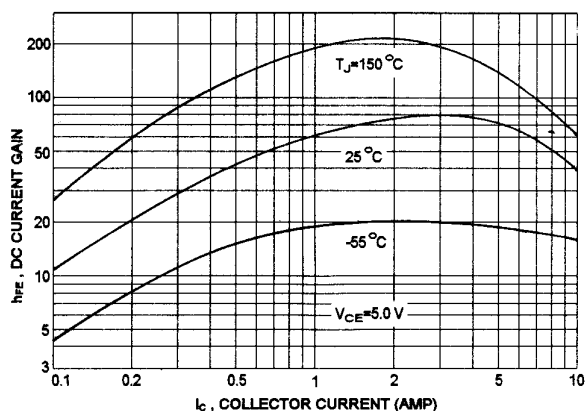
Small-Signal Current Gain(2) ($I_C = 1.0\text{ A}, V_{\text{CE}} = 10\text{ V}, f = 1.0\text{ MHz}$)		$ h_{fe} $	10		
Output Capacitance ($V_{\text{CB}} = 10\text{ V}, I_E = 0, f = 100\text{ kHz}$)		C_{ob}	60		pF

SWITCHING CHARACTERISTICS

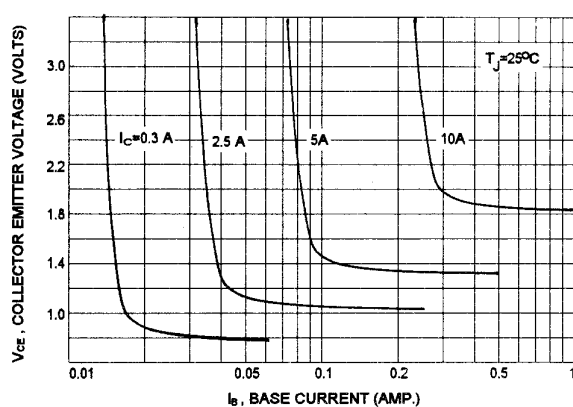
Delay Time	$V_{\text{CC}} = 250\text{ V}, I_C = 5.0\text{ A}$ $I_{B1} = 250\text{ mA}, V_{\text{BE(off)}} = 5.0\text{ V}$ $t_p = 50\text{ us}, \text{Duty Cycle} \leq 2\%$	t_d		0.2	us
Rise Time		t_r		0.6	us
Storage Time		t_s		3.0	us
Fall Time		t_f		1.5	us

(1) Pulse Test: Pulse width = 300 us , Duty Cycle $\leq 2.0\%$ (2) $f_T = |h_{fe}| \cdot f_{\text{test}}$

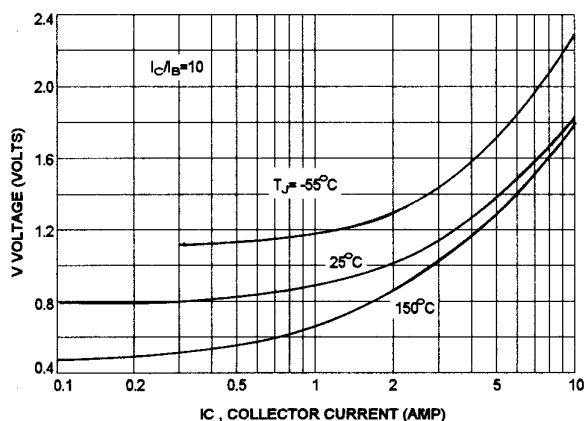
DC CURRENT GAIN



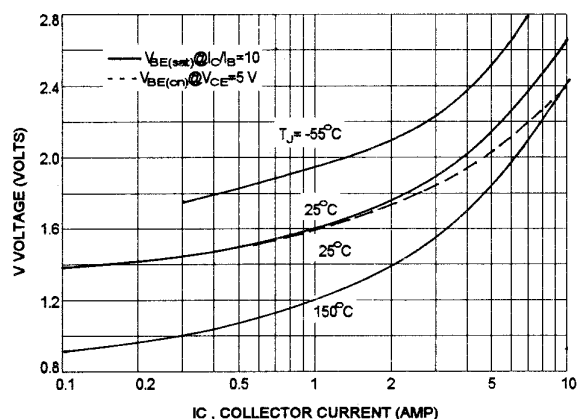
COLLECTOR SATURATION REGION



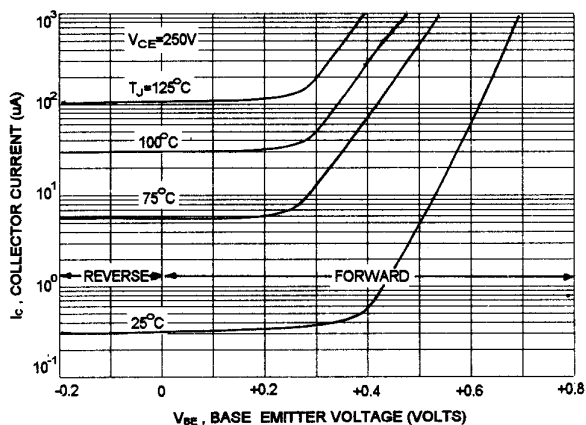
COLLECTOR EMITTER SATURATION VOLTAGE



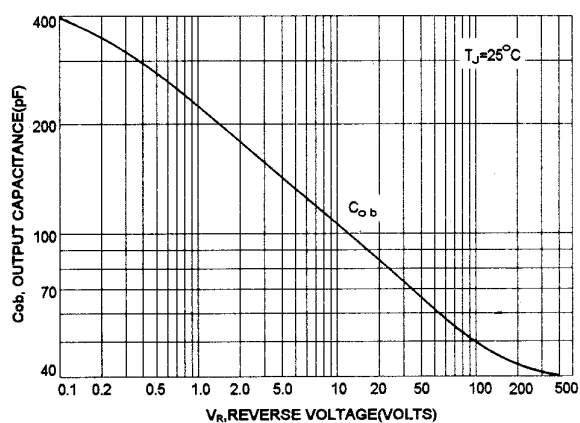
BASE EMITTER VOLTAGE



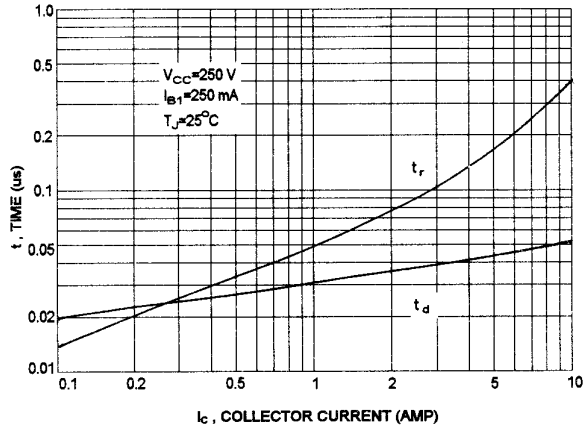
COLLECTOR CUT-OFF REGION



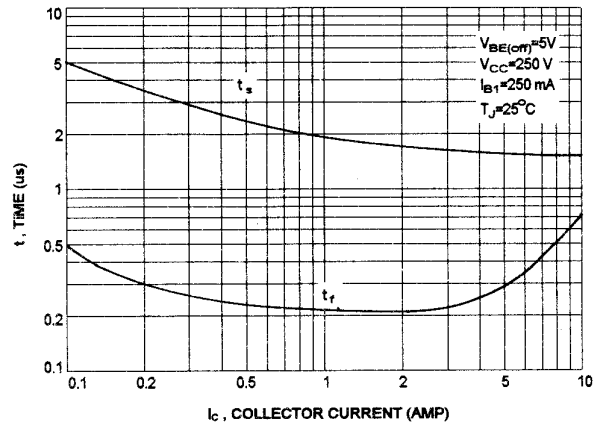
OUTPUT CAPACITANCES



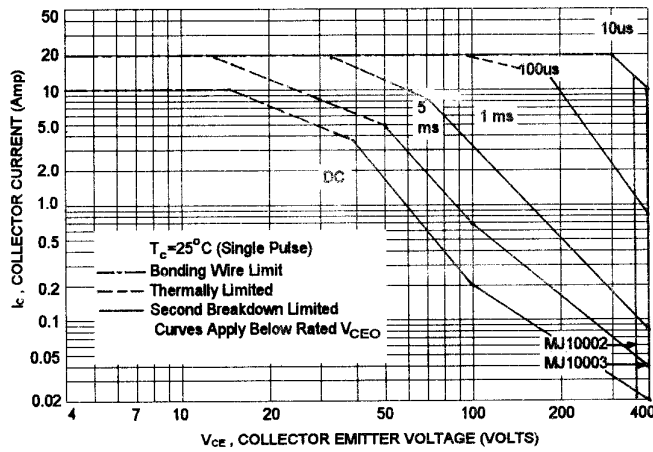
TURN-ON TIME



TURN-OFF TIME



ACTIVE REGION SAFE OPERATING AREA



REVERSE BIAS SWITCHING SAFE OPERATING AREA

