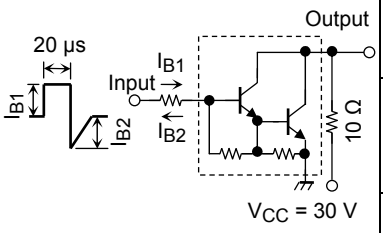
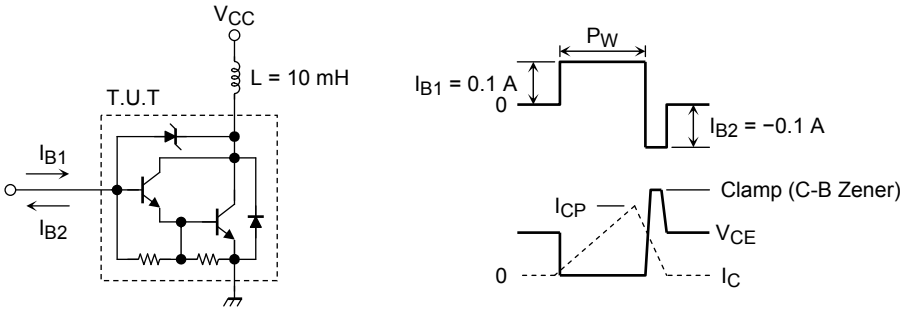
Electrical Characteristics (Tc = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	V_{CB} = 45 V, I_E = 0	—	—	10	μA
Collector cut-off current		I_{CEO}	V_{CE} = 45 V, I_B = 0	—	—	10	μA
Emitter cut-off current		I_{EBO}	V_{EB} = 6 V, I_C = 0	—	—	2.5	mA
Collector-base breakdown voltage		$V_{(BR)\ CBO}$	I_C = 1 mA, I_E = 0	50	60	70	V
Collector-emitter breakdown voltage		$V_{(BR)\ CEO}$	I_C = 10 mA, I_B = 0	50	60	70	V
DC current gain		$h_{FE\ (1)}$	V_{CE} = 3 V, I_C = 3 A	2000	—	15000	
		$h_{FE\ (2)}$	V_{CE} = 3 V, I_C = 5 A	1000	—	—	
Collector-emitter saturation voltage		$V_{CE\ (sat)\ (1)}$	I_C = 3 A, I_B = 6 mA	—	1.1	1.5	V
		$V_{CE\ (sat)\ (2)}$	I_C = 5 A, I_B = 20 mA	—	1.3	2.5	
Base-emitter saturation voltage		$V_{BE\ (sat)}$	I_C = 3 A, I_B = 6 mA	—	1.7	2.5	V
Unclamped inductive load energy		$E_{S/B}$	(Note 1)	150	—	—	mJ
Switching time	Turn-on time	t_{on}	 $I_{B1} = -I_{B2}$ = 6 mA, duty cycle ≤ 1%	—	1.0	—	μs
	Storage time	t_{stg}		—	4.0	—	
	Fall time	t_f		—	2.5	—	

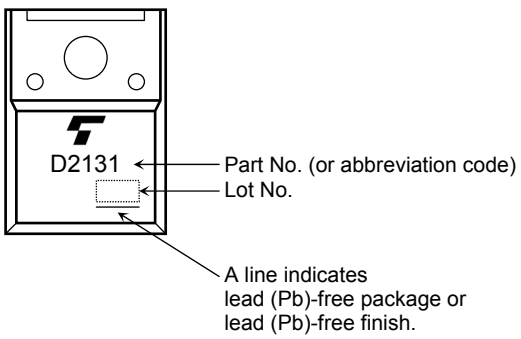
Note 1: Measurement circuit for unclamped inductive load energy



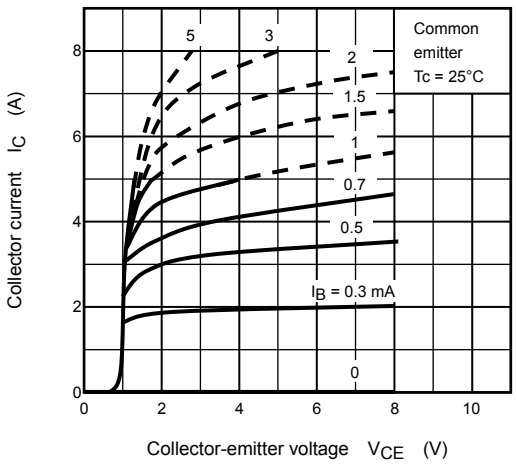
Note 2: (1) Pulse width adjusted for desired I_{CP} (I_{CP} = 5.47 A min)

(2) $E = 1/2\ L\ I_{CP}^2$

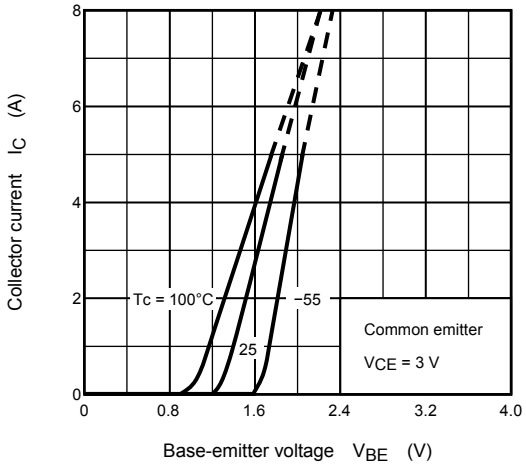
Marking



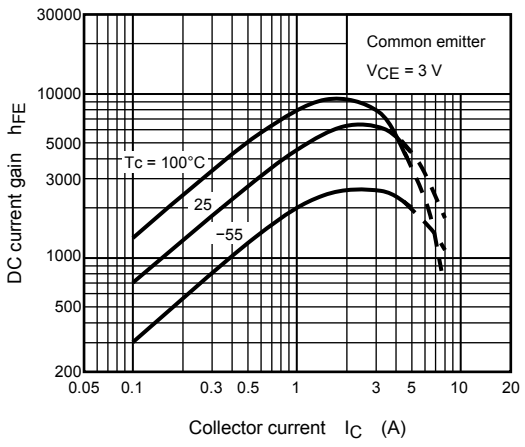
$I_C - V_{CE}$



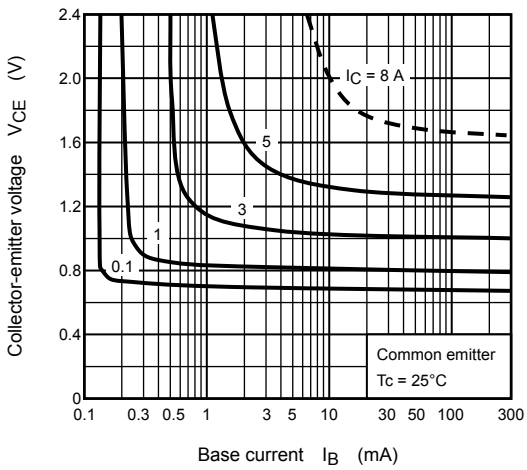
$I_C - V_{BE}$



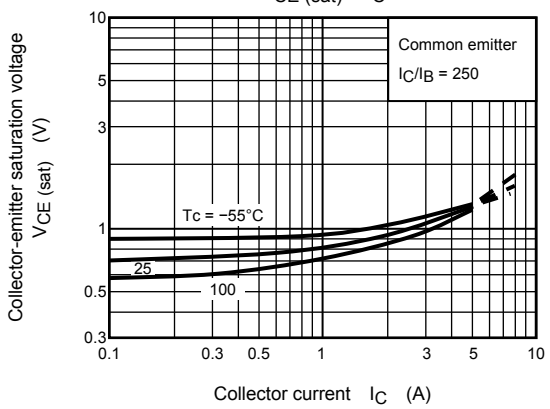
$h_{FE} - I_C$



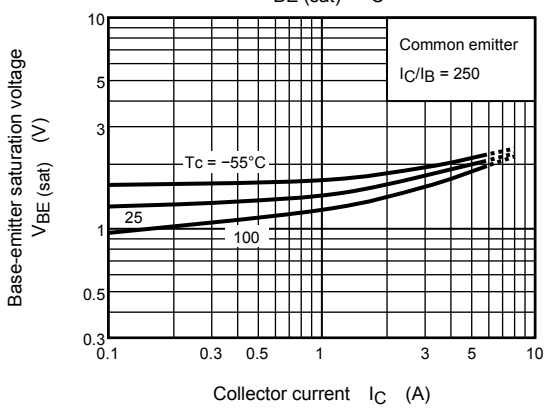
$V_{CE} - I_B$



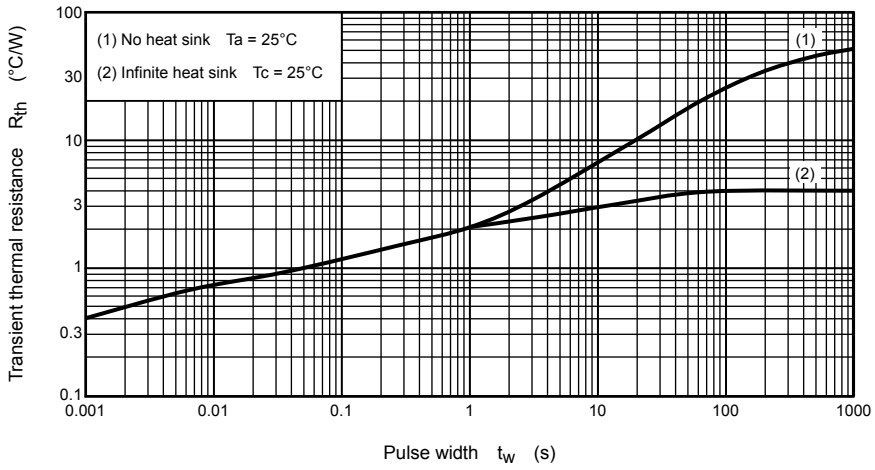
$V_{CE\ (sat)} - I_C$



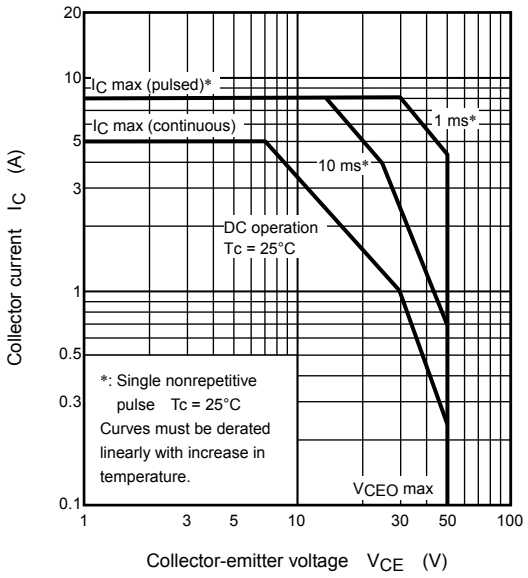
$V_{BE\ (sat)} - I_C$



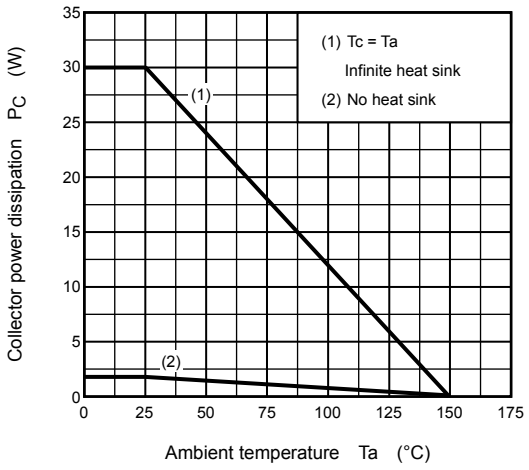
$R_{th} - t_w$



Safe Operating Area



$P_C - Ta$



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