

Features

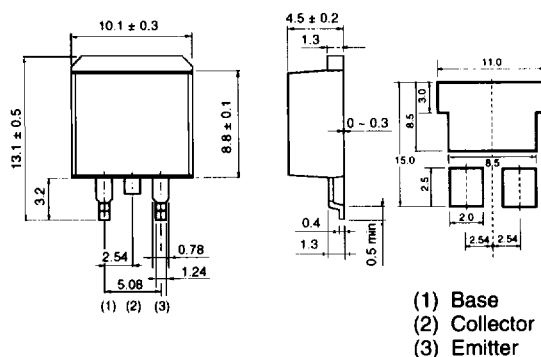
- available in PSD package
- high-speed switching, typically, $t_f \leq 0.3 \mu\text{s}$ for $I_C = 6 \text{ A}$
- low collector saturation voltage, typically $V_{CE(sat)} \leq 0.3 \text{ V}$ for $I_C/I_B = 6 \text{ A}/0.3 \text{ A}$
- wide safe operating area (SOA)

Applications

- high speed dc-dc converter

Dimensions (Units : mm)

2SC4939 (PSD)

Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

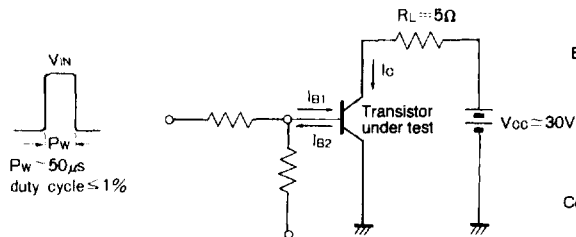
Parameter	Symbol	Limits	Unit	Conditions
Collector-to-base voltage	V_{CBO}	100	V	
Collector-to-emitter voltage	V_{CEO}	60	V	
Emitter-to-base voltage	V_{EBO}	5	V	
Collector current	I_C	12	A	DC
	I_{CP}	20		Single pulse, $P_W = 10 \text{ ms}$
Collector dissipation	P_C	35	W	$T_C = 25^\circ\text{C}$
Junction temperature	T_j	150	$^\circ\text{C}$	
Storage temperature	T_{stg}	$-55 \sim +150$	$^\circ\text{C}$	

Electrical characteristics (unless otherwise noted, $T_a = 25^\circ\text{C}$)

Parameter	Symbol	Min	Typical	Max	Unit	Conditions
Collector-to-emitter voltage	V_{CEO} (sus)	60			V	$I_C/I_B = 6\text{ A}/0.6\text{ A}$, $L = 1\text{ mH}$
Collector-to-base breakdown voltage	BV_{CBO}	100			V	$I_C = 50\text{ }\mu\text{A}$
Collector-to-emitter breakdown voltage	BV_{CEO}	60			V	$I_C = 1\text{ mA}$
Emitter-to-base breakdown voltage	BV_{EBO}	5	7		V	$I_E = 50\text{ }\mu\text{A}$
Collector cutoff current	I_{CBO}			10	μA	$V_{CB} = 100\text{ V}$
Emitter cutoff current	I_{EBO}			10	μA	$V_{EB} = 5\text{ V}$
DC current gain	h_{FE}	60	120	320		$V_{CE} = 2\text{ V}$, $I_C = 2\text{ A}$, single pulse
DC current gain	h_{FE}	40				$V_{CE} = 2\text{ V}$, $I_C = 6\text{ A}$, single pulse
Collector-to-emitter saturation voltage	$V_{CE(sat)}$			0.3	V	$I_C/I_B = 6\text{ A}/0.3\text{ A}$, single pulse
				0.5		$I_C/I_B = 8\text{ A}/0.4\text{ A}$, single pulse
Base-to-emitter saturation voltage	$V_{BE(sat)}$			1.2	V	$I_C/I_B = 6\text{ A}/0.3\text{ A}$, single pulse
				1.5		$I_C/I_B = 8\text{ A}/0.4\text{ A}$, single pulse
Transition frequency	f_T		120		MHz	$V_{CE} = 10\text{ V}$, $I_E = -1\text{ A}$, $f = 30\text{ MHz}$
Collector output capacitance	C_{ob}		80		pF	$V_{CB} = 10\text{ V}$, $I_E = 0\text{ A}$, $f = 1\text{ MHz}$
Turn on time	t_{on}			0.3	μs	$I_C = 6\text{ A}$, $I_{B1} = -I_{B2} = 0.3\text{ A}$, $V_{CC} \approx 30\text{ V}$
Storage time	t_{stg}			1.5	μs	
Fall time	t_f			0.3	μs	

 h_{FE} rankings

Item	D	E	F
h_{FE}	60 ~ 120	100 ~ 200	160 ~ 320

Figure 1 Switching time test circuit**Figure 2 Switching time waveforms**