

# 2SD1964

Silicon NPN epitaxial planar type

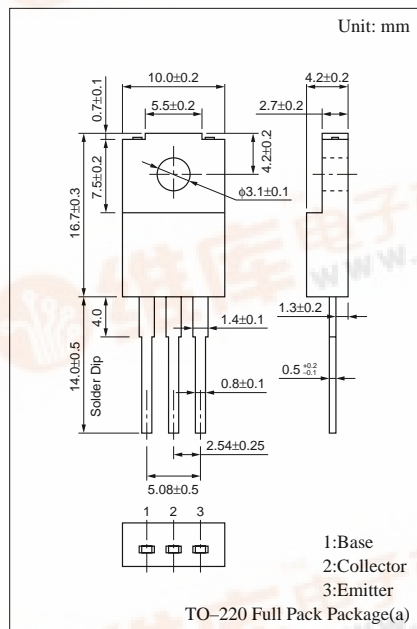
For power switching

## Features

- Low collector to emitter saturation voltage  $V_{CE(sat)}$
- Satisfactory linearity of forward current transfer ratio  $h_{FE}$
- Large collector current  $I_C$
- Full-pack package which can be installed to the heat sink with one screw

## Absolute Maximum Ratings ( $T_C=25^\circ C$ )

Parameter	Symbol	Rated	Unit
Collector to base voltage	$V_{CBO}$	130	V
Collector to emitter voltage	$V_{CEO}$	80	V
Emitter to base voltage	$V_{EBO}$	7	V
Peak collector current	$I_{CP}$	25	A
Collector current	$I_C$	15	A
Collector power dissipation	$P_C$	$T_C=25^\circ C$	50
		$T_a=25^\circ C$	2
Junction temperature	$T_j$	150	$^\circ C$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ C$



## Electrical Characteristics ( $T_C=25^\circ C$ )

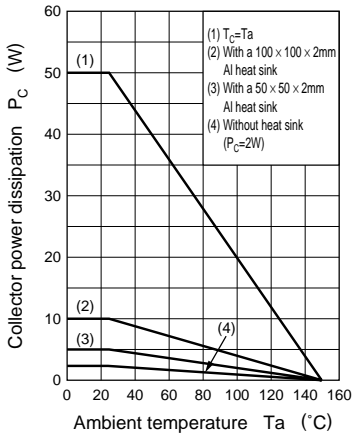
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = 100V, I_E = 0$			10	$\mu A$
Emitter cutoff current	$I_{EBO}$	$V_{EB} = 5V, I_C = 0$			50	$\mu A$
Collector to emitter voltage	$V_{CEO}$	$I_C = 10mA, I_B = 0$	80			V
Forward current transfer ratio	$h_{FE1}$	$V_{CE} = 2V, I_C = 0.1A$	45			
	$h_{FE2}^*$	$V_{CE} = 2V, I_C = 3A$	90		260	
	$h_{FE3}$	$V_{CE} = 2V, I_C = 8A$	30			
Collector to emitter saturation voltage	$V_{CE(sat)1}$	$I_C = 7A, I_B = 0.35A$			0.5	V
	$V_{CE(sat)2}$	$I_C = 15A, I_B = 1.5A$			1.5	V
Base to emitter saturation voltage	$V_{BE(sat)1}$	$I_C = 7A, I_B = 0.35A$			1.5	V
	$V_{BE(sat)2}$	$I_C = 15A, I_B = 1.5A$			2.5	V
Transition frequency	$f_T$	$V_{CE} = 10V, I_C = 0.5A, f = 1MHz$		20		MHz
Turn-on time	$t_{on}$	$I_C = 7A, I_{B1} = 0.7A, I_{B2} = -0.7A, V_{CC} = 50V$		0.5		$\mu s$
Storage time	$t_{stg}$			2.0		$\mu s$
Fall time	$t_f$				0.2	

h<sub>FE2</sub> Rank Classification

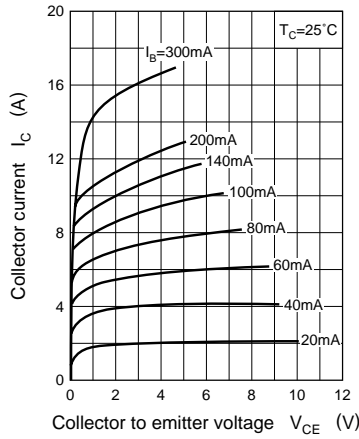
Rank	Q	P
$h_{FE2}$	90 to 180	130 to 260



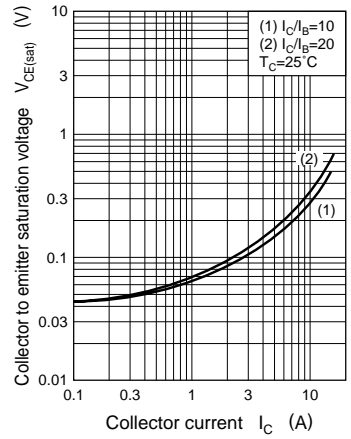
$P_C - T_a$



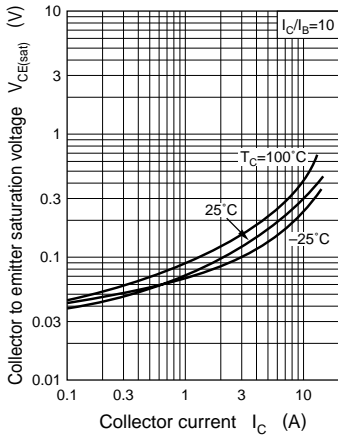
$I_C - V_{CE}$



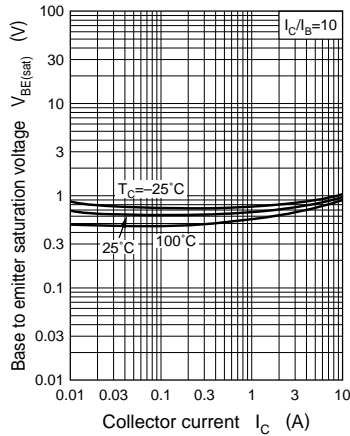
$V_{CE(sat)} - I_C$



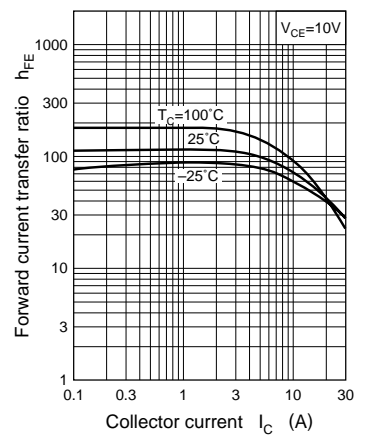
$V_{CE(sat)} - I_C$



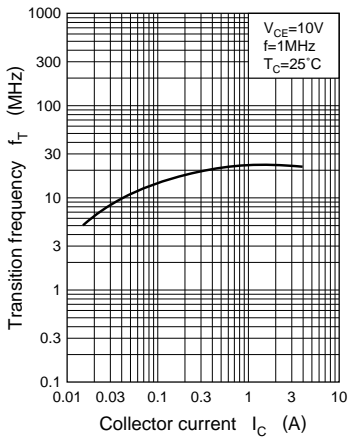
$V_{BE(sat)} - I_C$



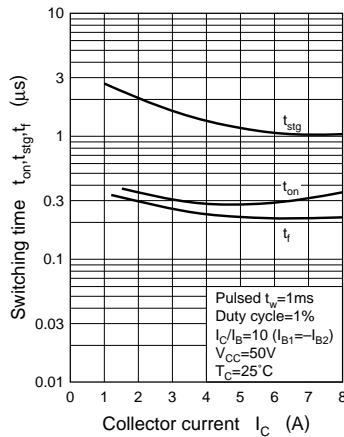
$h_{FE} - I_C$



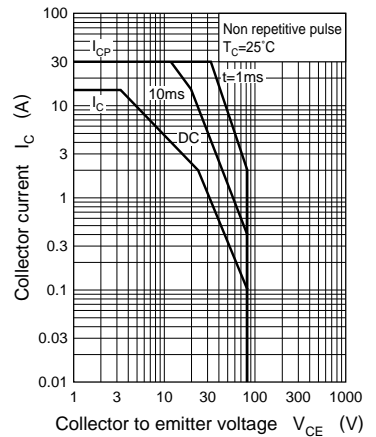
$f_T - I_C$



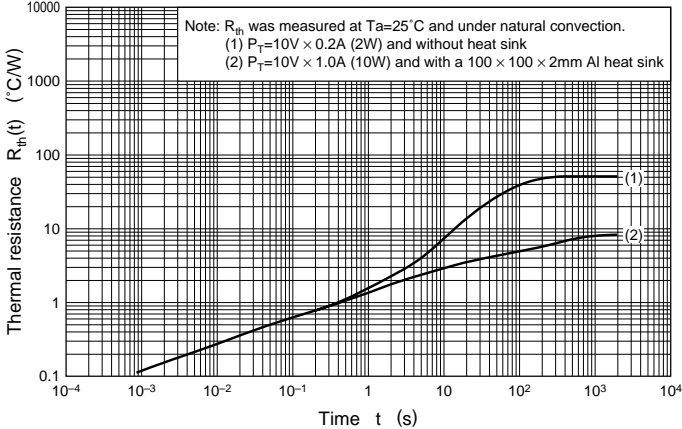
$t_{on}, t_{stg}, t_f - I_C$



Area of safe operation (ASO)



$$R_{th(t)} - t$$



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