

2SC5060

Transistor, NPN, Darlington

Features

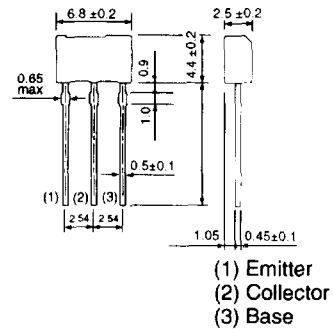
- available in ATV TV 2 package
- built-in 90 ± 10 V Zener diode between collector and base
- low Zener voltage fluctuation
- highly resistant to surge
- damper diode incorporated
- built-in resistors between base and emitter
- Darlington connection provides high dc current gain (h_{FE})

Applications

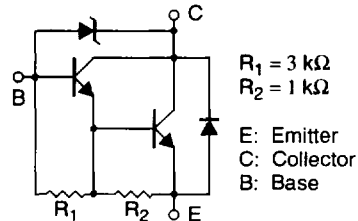
- low frequency power amplifier

Dimensions (Units : mm)

2SC5060 (ATV TV2)



Equivalent circuit



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

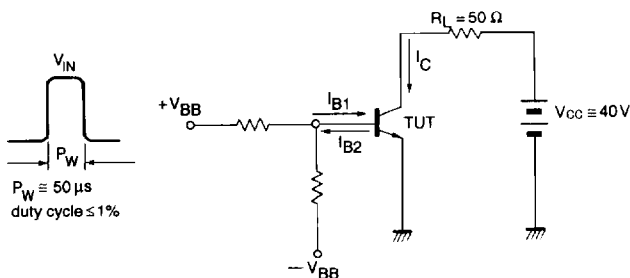
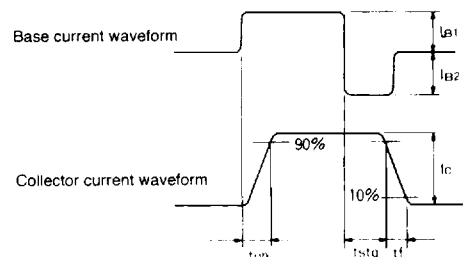
Parameter	Symbol	Limits	Unit	Conditions
Collector-to-base voltage	V_{CBO}	90 ± 10	V	
Collector-to-emitter voltage	V_{CEO}	90 ± 10	V	
Emitter-to-base voltage	V_{EBO}	6	V	
Collector current	I_C	1	A	Continuous (dc)
	I_{CP}	2	A	Single pulse, $P_W = 100 \text{ ms}$
Collector dissipation	P_C	1.0	W	$T_a = 25^\circ\text{C}$. Collector copper foil area must be 1 cm^2 , board must be 1.7 mm thick.
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-base breakdown voltage	BV_{CBO}	80		100	V	$I_C = 50\ \mu\text{A}$
Collector-to-emitter breakdown voltage	BV_{CEO}	80		100	V	$I_C = 1\ \text{mA}$
Collector cutoff current	I_{CBO}			10	μA	$V_{CB} = 70\ \text{V}$
Emitter cutoff current	I_{EBO}			3	μA	$V_{EB} = 5\ \text{V}$
DC current gain	h_{FE}	1000		5000		$V_{CE} = 3\ \text{V}$, $I_C = 0.5\ \text{A}$, single pulse
Collector-to-emitter saturation voltage	$V_{CE(sat)}$			1.5	V	$I_C/I_B = 500\ \text{mA}/1\ \text{mA}$
Collector-to-emitter saturation voltage	$V_{BE(sat)}$			2.0	V	$I_C/I_B = 500\ \text{mA}/1\ \text{mA}$, single pulse
Transition frequency	f_T		80		MHz	$V_{CE} = 5\ \text{V}$, $I_E = -0.1\ \text{A}$, $f = 30\ \text{MHz}$, characteristics of built-in transistors
Output capacitance	C_{ob}		20		pF	$V_{CB} = 10\ \text{V}$, $I_E = 0\ \text{A}$, $f = 1\ \text{MHz}$
Turn on time	t_{on}		0.2		μs	$I_C = 0.8\ \text{A}$, $R_L = 50\ \Omega$, $I_{B1} = -I_{B2} = 8\ \text{mA}$ $V_{CC} \cong 40\ \text{V}$
Storage time	t_{stg}		5.0		μs	
Fall time	t_f		0.6		μs	

 h_{FE} rankings

Item	M	N
h_{FE}	1000 ~ 2500	2000 ~ 5000

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

Electrical characteristic curves

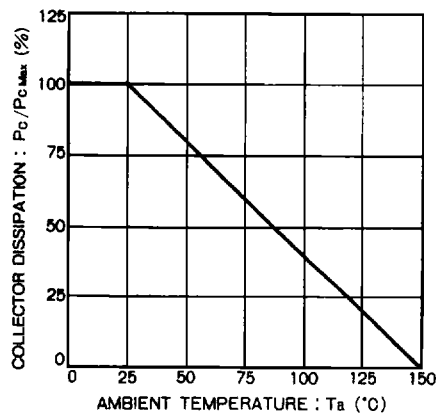


Figure 3

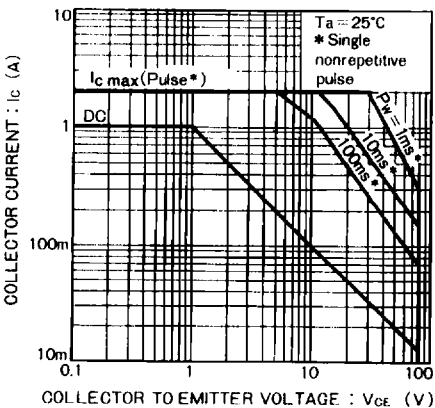


Figure 4

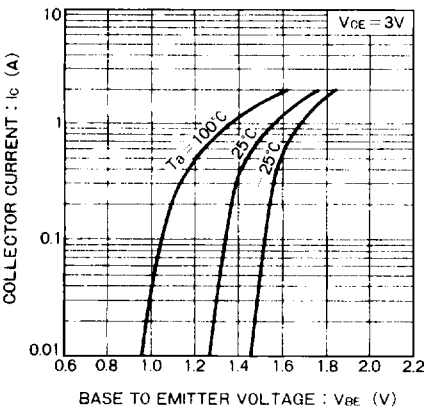


Figure 5

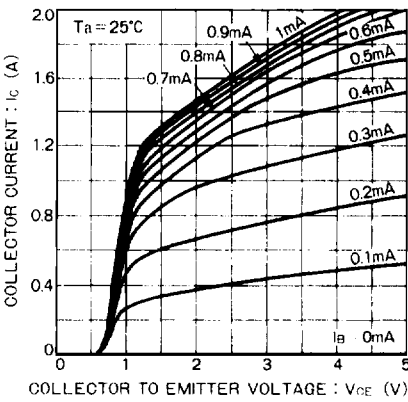


Figure 6

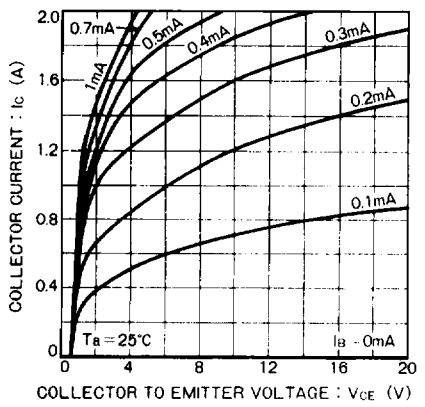


Figure 7

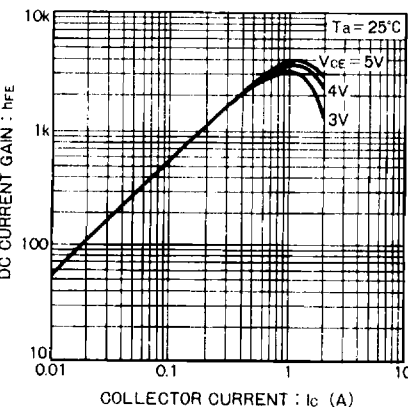


Figure 8

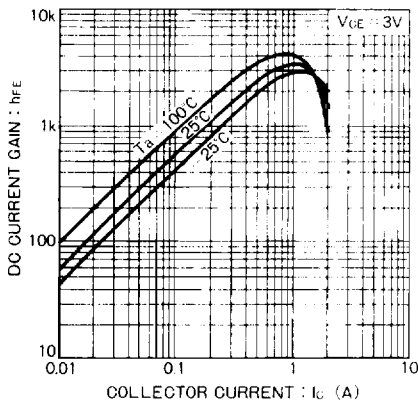


Figure 9

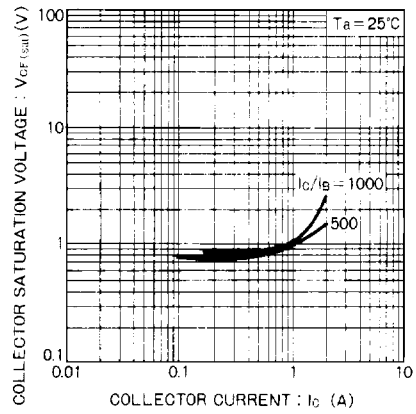


Figure 10

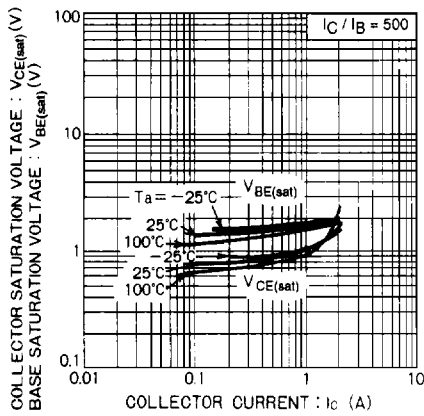


Figure 11

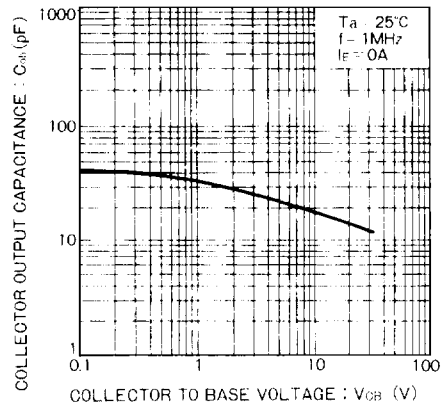


Figure 12

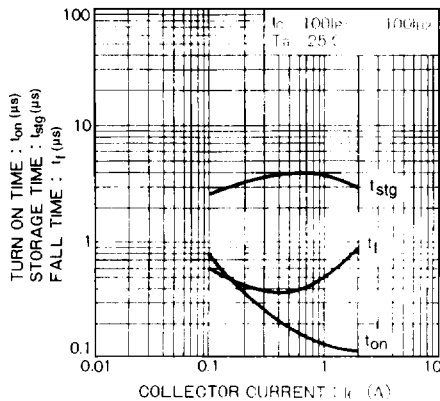


Figure 13

Ordering information

Package	Tape
Code	TV2
Basic order quantity	2 500
2SC5060	★
★ = Standard, ☆ = Semi-standard, * = Special order	