

2SC4038

Transistor, NPN

Features

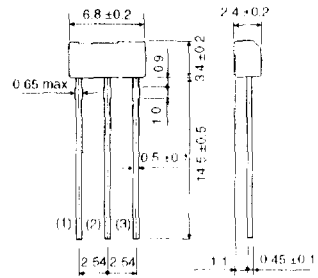
- available in FTL TL2 package
- low collector saturation voltage, typically $V_{CE(sat)} = 0.04\text{ V}$ at $I_C/I_B = 10\text{ mA}/1\text{ mA}$
- low output capacitance, typically $C_{ob} = 2.0\text{ pF}$
- low noise, typically $NF = 1\text{ dB}$ at $V_{CE} = 6\text{ V}$, $I_C = 0.1\text{ mA}$, $R_g = 10\text{ k}\Omega$, and $f = 1\text{ kHz}$
- complementary pair with 2SA1561A

Applications

- general small signal amplifier

Dimensions (Units : mm)

2SC4038 (FTL TL2)



- (1) Emitter
- (2) Collector
- (3) Base

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

Parameter	Symbol	Limits	Unit
Collector-to-base voltage	V_{CBO}	60	V
Collector-to-emitter voltage	V_{CEO}	50	V
Emitter-to-base voltage	V_{EBO}	5	V
Collector current	I_C	150	mA
Collector dissipation	P_C	300	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 ~ +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}	60			V	$I_C = 50 \mu\text{A}$
Collector-to-emitter breakdown voltage	BV_{CEO}	50			V	$I_C = 1 \text{ mA}$
Emitter-to-base breakdown voltage	BV_{EBO}	5			V	$I_E = 50 \mu\text{A}$
Collector cutoff current	I_{CBO}			0.5	μA	$V_{CB} = 30 \text{ V}$
Emitter cutoff current	I_{EBO}			0.5	μA	$V_{EB} = 4 \text{ V}$
DC current gain	h_{FE}	120		560		$V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}$
Collector-to-emitter saturation voltage	$V_{CE(sat)}$			0.4	V	$I_C / I_B = 50 \text{ mA} / 5 \text{ mA}$
Transition frequency	f_T		180		MHz	$V_{CE} = 12 \text{ V}, I_E = -2 \text{ mA}, f = 100 \text{ MHz}$
Output capacitance	C_{ob}		2.0	3.5	pF	$V_{CB} = 12 \text{ V}, I_E = 0 \text{ A}, f = 1 \text{ MHz}$

h_{FE} rankings

Item	Q	R	S
h_{FE}	120 ~ 270	180 ~ 390	270 ~ 560

Electrical characteristic curves

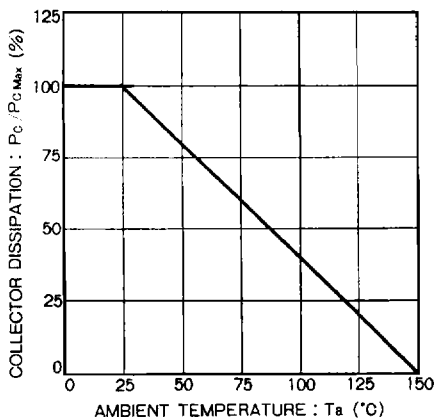


Figure 1

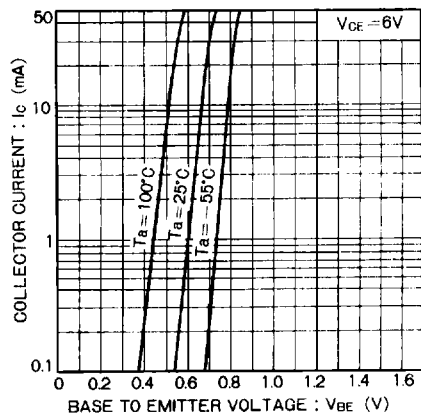


Figure 2

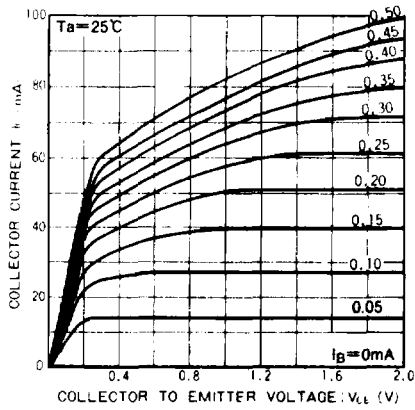


Figure 3

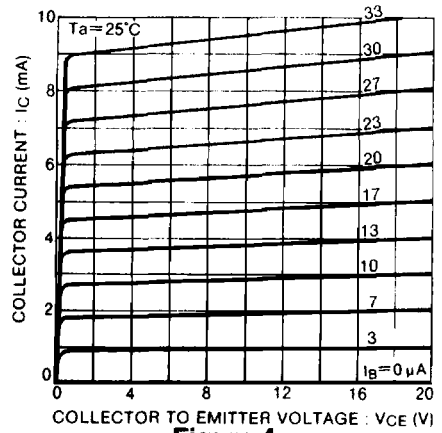


Figure 4

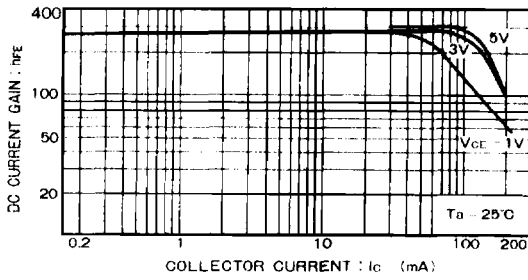


Figure 5

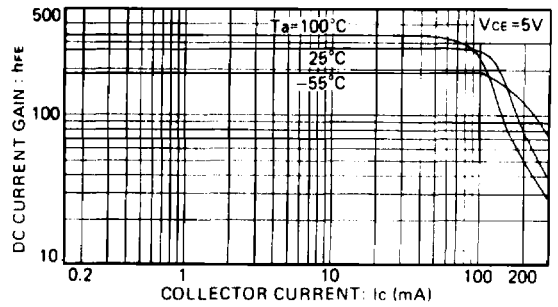


Figure 6

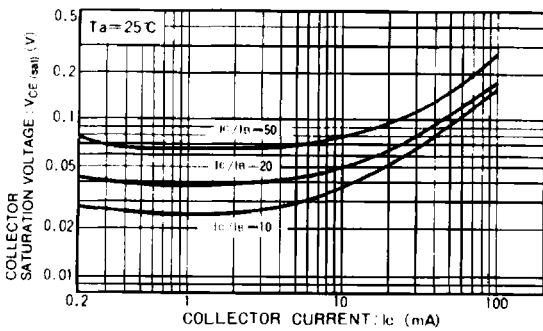


Figure 7

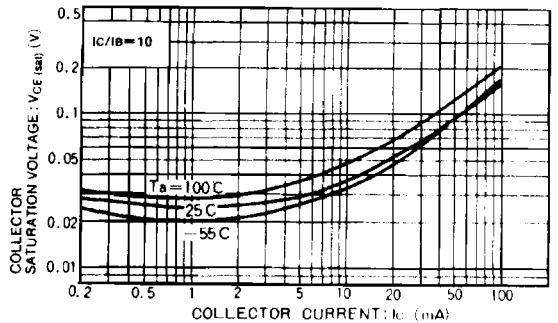


Figure 8

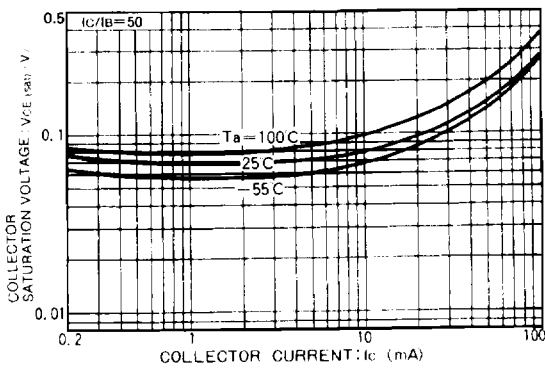


Figure 9

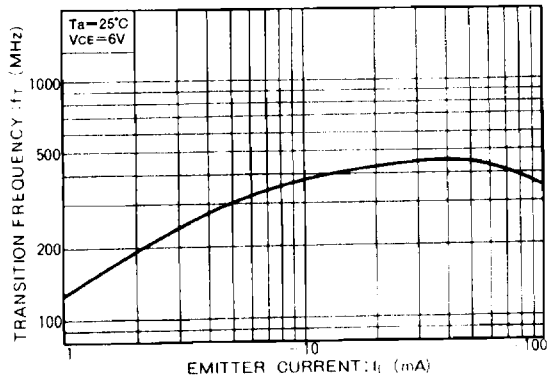


Figure 10

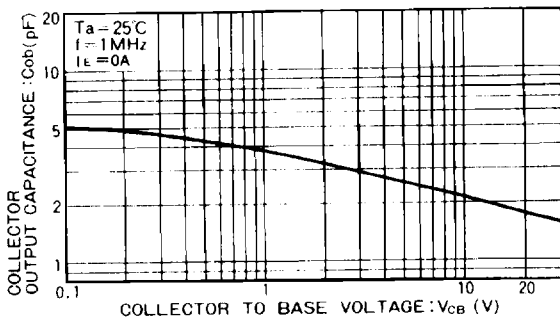


Figure 11

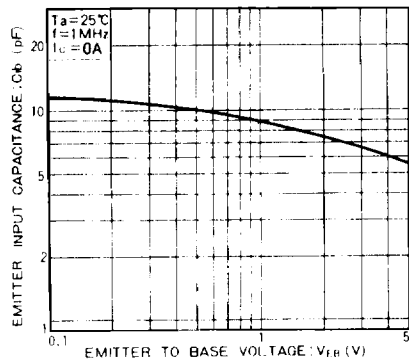


Figure 12

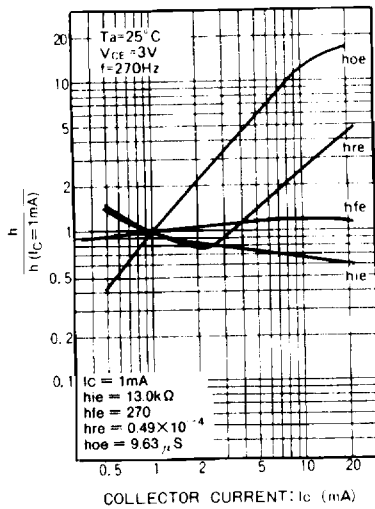


Figure 13

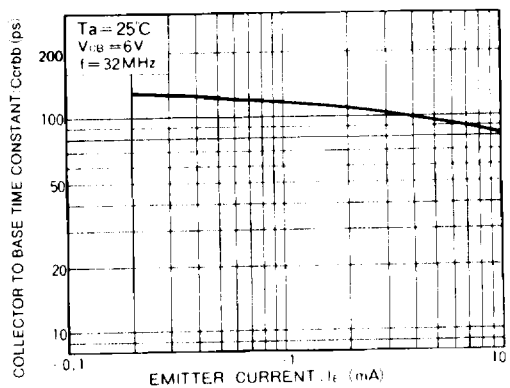


Figure 14

2SC4038 Transistor, NPN, 2SC Series

Ordering information

Package	Tape
Code	TL2
Basic order quantity	2 500
2SC4038	★
★ = Standard, ☆ = Semi-standard, * = Special order	