

# CE2F3P

# on-chip resistor NPN silicon epitaxial transistor For mid-speed switching

The CE2F3P is a transistor of on-chip high hFE resistor incorporating dumper diode in collector to emitter as protect elements. This transistor is ideal for actuator drives of OA equipments and electric equipments.

# **FEATURES**

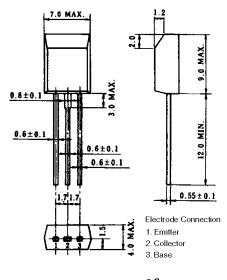
- On-chip bias resistor:  $R_1 = 2.2 \text{ k}\Omega$ ,  $R_2 = 10 \text{ k}\Omega$
- Low power consumption during driving: Vol = 0.12 V @Vl = 5.0 V, Ic = 0.5 A
- On-chip dumper diode for reverse cable

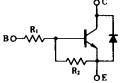
#### ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	VcBO	60	V
Collector to emitter voltage	VCEO	60	V
Emitter to base voltage	VEBO	15	V
Collector current (DC)	Ic(DC)	±2.0	Α
Collector current (Pulse)	Ic(pulse) *	±3.0	Α
Base current (DC)	I <sub>B(DC)</sub>	0.03	Α
Total power dissipation	Рт	1.0	W
Junction temperature	Tj	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

<sup>\*</sup> PW ≤ 10 ms, duty cycle ≤ 50 %

#### PACKAGE DRAWING (UNIT: mm)





# **ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

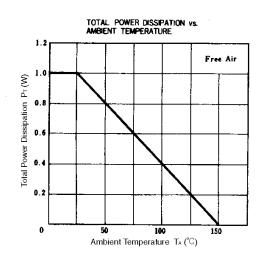
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	Ісво	V <sub>CB</sub> = 40 V, I <sub>E</sub> = 0			100	nA
DC current gain	h <sub>FE1</sub> **	Vce = 5.0 V, Ic = 0.2 A	700	1200		-
DC current gain	h <sub>FE2</sub> **	Vce = 5.0 V, Ic = 1.0 A	1000	1600	3000	-
DC current gain	hFE3 **	Vce = 5.0 V, Ic = 2.0 A	500	1200		-
Low level output voltage	<b>V</b> ol **	V <sub>I</sub> = 5.0 V, I <sub>C</sub> = 0.5 A		0.12	0.3	V
Low level input voltage	VIL **	V <sub>CE</sub> = 12 V, I <sub>C</sub> = 100 μA		0.5	0.4	V
Input resistance 1	R <sub>1</sub>		1.54	2.2	2.86	kΩ
Input resistance 2	R <sub>2</sub>		7.0	10.0	13.0	kΩ
Turn-on time	<b>t</b> on	Ic = 1.0 A		0.4		μs
Storage time	tstg	Іві = –Ів2 = 10 mA		1.4		μs
Fall time	tf	$V_{CC} = 20 \text{ V}, \text{ RL} = 20 \Omega$		0.5		μs

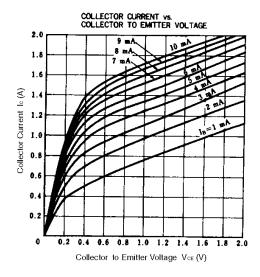
<sup>\*\*</sup> Pulse test PW  $\leq$  350  $\mu$ s, duty cycle  $\leq$  2 %

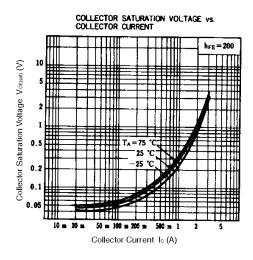
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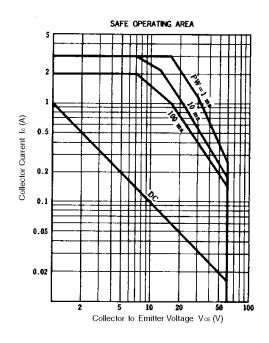


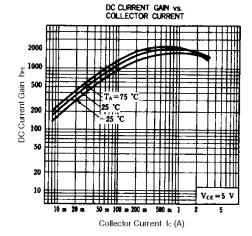
# TYPICAL CHARACTERISTICS (Ta = 25°C)

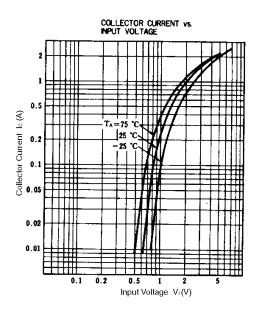


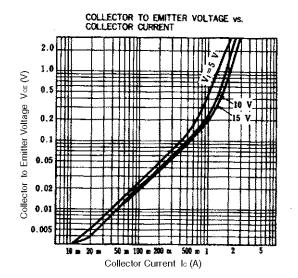


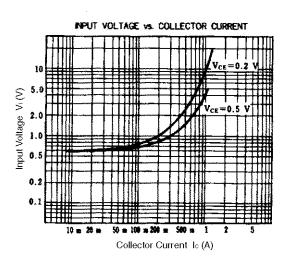












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