General Purpose Transistors

40V,2A Low VCE(sat) NPN Silicon

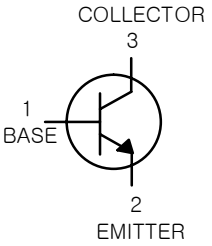
FEATURES

- Low collector-emitter saturation voltage
- High current capability
- Improved device reliability due to reduced heat generation
- Replacement for SOT89/SOT-223 standard packaged transistors.
- We declare that the material of product compliance with RoHS requirements.
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

SOT–23

APPLICATIONS

- Supply line switching circuits
- Battery management applications
- DC/DC converter applications
- Strobe flash units
- Heavy duty battery powered equipment (motor and lamp drivers).



DESCRIPTION

NPN low V_{CEsat} transistor in a SOT-23 plastic package. PNP complement: FTB5240

ORDERING INFORMATION

Device	Marking	Shipping
FTD4240	ZE	3000/Tape & Reel

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	40	V
Collector–Base Voltage	V_{CBO}	40	V
Emitter–Base Voltage	V_{EBO}	5.0	V
Collector Current — Continuous	I_C	2	A
total power dissipation	P_D	0.3	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-65 —+150	°C

THERMAL CHARACTERISTICS

Symbol	Parameter	Conditions	Value	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air;note 1	417	K/W
		in free air;note 2	260	K/W

Notes:

1.Device mounted on a printed-circuit board,single sided copper,tinplated and standard footprint.

2.Device mounted on a printed-circuit board,single sided copper,tinplated and mounted pad for collector 1 cm^2.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	I_E = 0; V_{CB} = 30 V	–	100	nA
I_{EBO}	emitter-base cut-off current	I_C = 0; V_{EB} = 4 V	–	100	nA
h_{FE}	DC current gain	I_C = 100 mA; V_{CE} = 2 V	350	–	
		I_C = 500 mA; V_{CE} = 2 V	300	–	
		I_C = 1 A; V_{CE} = 2 V	300	–	
		I_C = 2 A; V_{CE} = 2 V	150	–	
V_{CEsat}	collector-emitter saturation voltage	I_C = 100 mA; I_B = 1 mA	–	70	mV
		I_C = 500 mA; I_B = 50 mA	–	100	mV
		I_C = 750 mA; I_B = 15 mA	–	180	mV
		I_C = 1 A; I_B = 50 mA; note 1	–	180	mV
		I_C = 2 A; I_B = 200 mA; note 1	–	320	mV
V_{BEsat}	base-emitter saturation voltage	I_C = 2 A; I_B = 200 mA; note 1	–	1.1	V
V_{BEon}	base-emitter turn on voltage	I_C = 100 mA; V_{CE} = 2 V	–	0.75	V
C_c	collector capacitance	I_E = I_e = 0; V_{CB} = 10 V; f = 1 MHz	–	20	pF
f_T	transition frequency	I_C = 100 mA; V_{CE} = 10 V; f = 100 MHz	100	–	MHz

Note

1. Pulse test: $t_p \leq 300\ \mu s$; $\delta \leq 0.02$.

ELECTRICAL CHARACTERISTIC CURVES (Ta = 25°C)

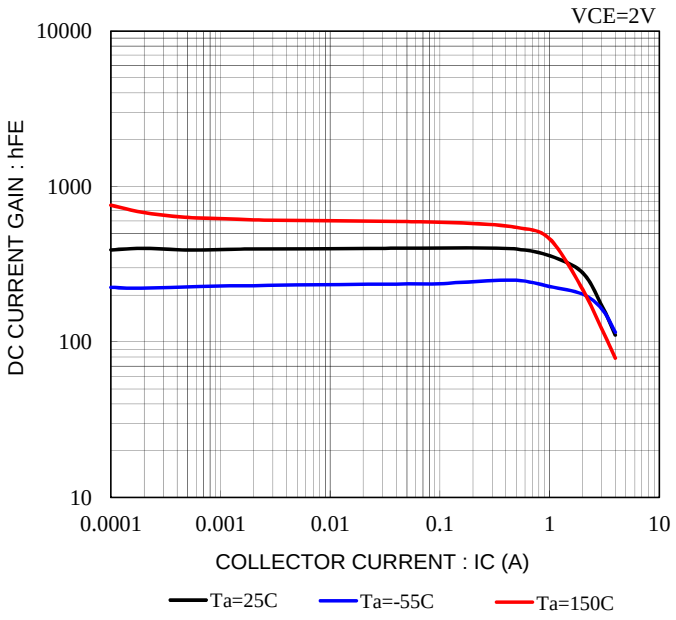


Fig.1 DC CURRENT GAIN VS.COLLECTOR CURRENT

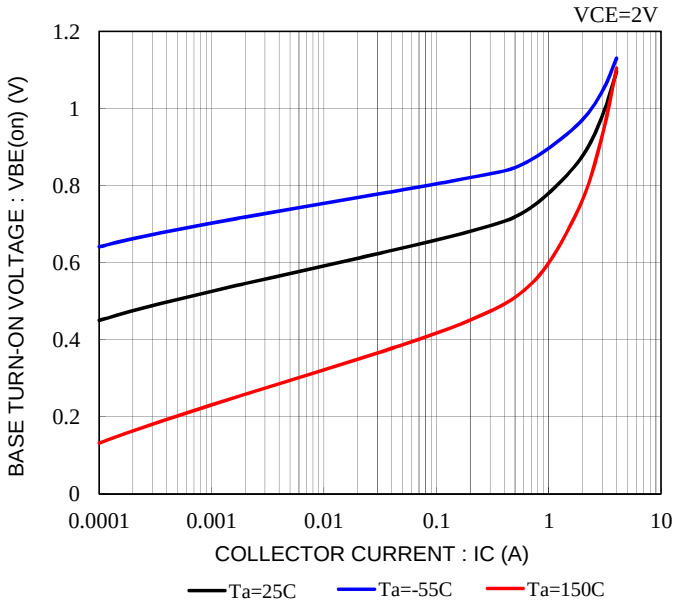


Fig.2 BASE-EMITTER TURN-ON VOLTAGE VS.COLLECTOR CURRENT

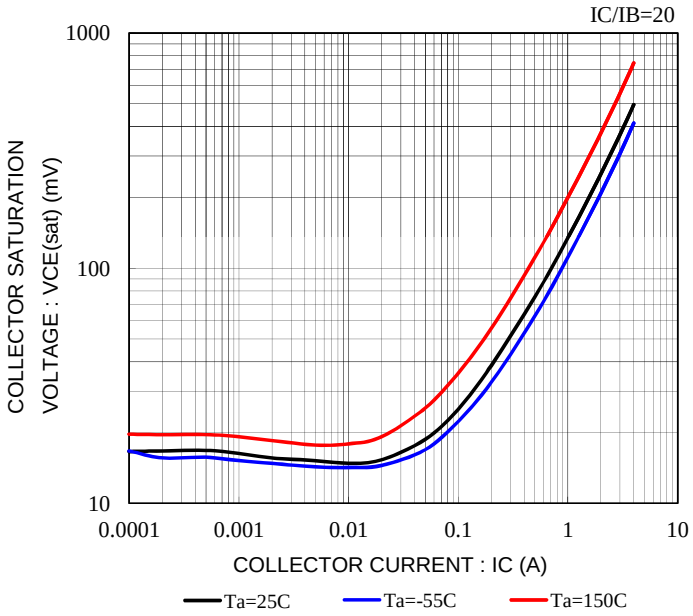


Fig.3 COLLECTOR-EMITTER SATURATION VOLTAGE VS.COLLECTOR CURRENT

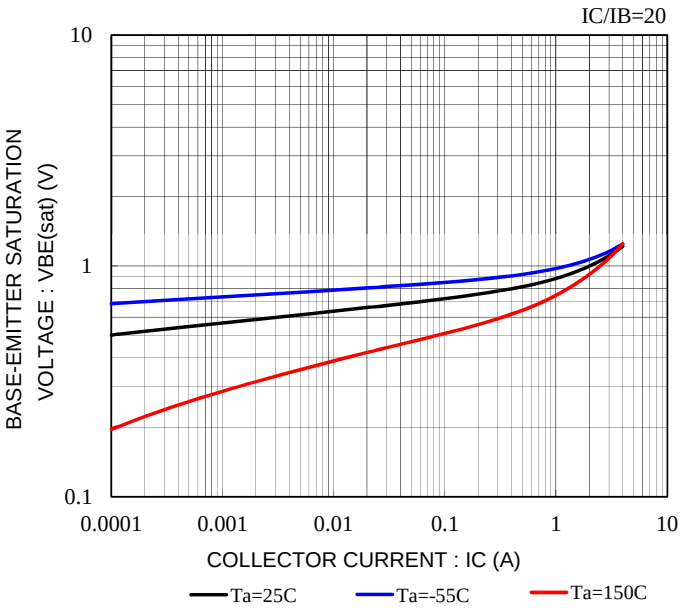


Fig.4 BASE-EMITTER SATURATION VOLTAGE VS.COLLECTOR CURRENT

ELECTRICAL CHARACTERISTIC CURVES (Ta = 25°C)

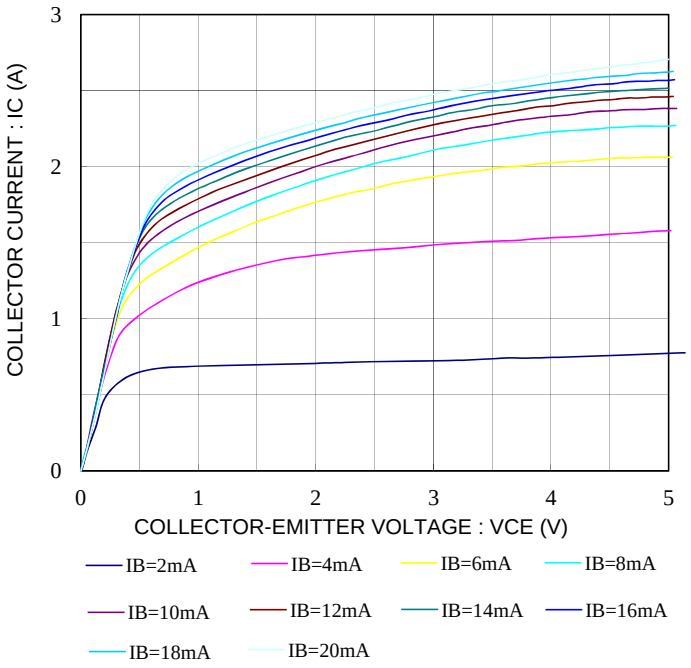


Fig.5 COLLECTOR CURRENT VS.COLLECTOR-EMITTER SATURATION VOLTAGE

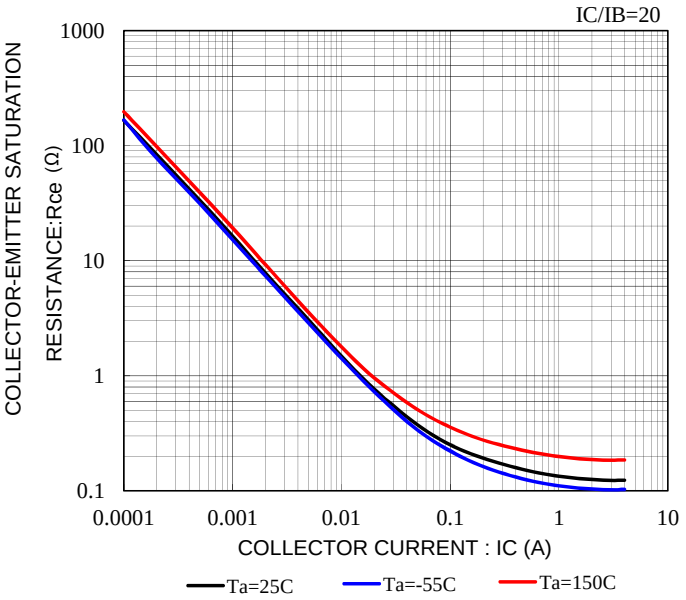
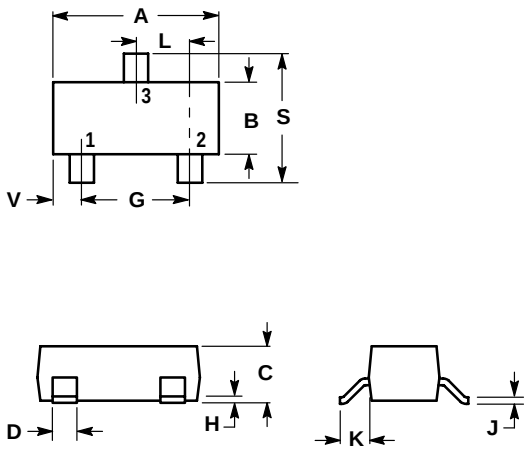


Fig.6 COLLECTOR-EMITTER SATURATION RESISTANCE VS.COLLECTOR CURRENT

SOT−23



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60