

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/SOT223 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.

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 SOT23 plastic package.
PNP complement: LBSS5240LT1G.

ORDERING INFORMATION

Device	Marking	Shipping
LBSS4240LT1G S-LBSS4240LT1G	ZE	3000/Tape & Reel
LBSS4240LT3G S-LBSS4240LT3G	ZE	10000/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

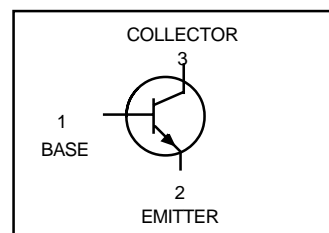
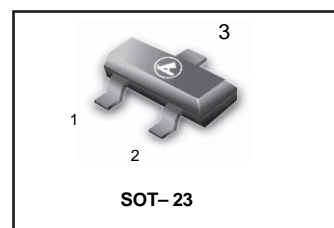
THERMAL CHARACTERISTICS

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 cm²

LBSS4240LT1G
S-LBSS4240LT1G



LBSS4240LT1G,S-LBSS4240LT1G
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

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

Note

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

LBSS4240LT1G,S-LBSS4240LT1G

ELECTRICAL CHARACTERISTIC CURVES (Ta = 25°C)

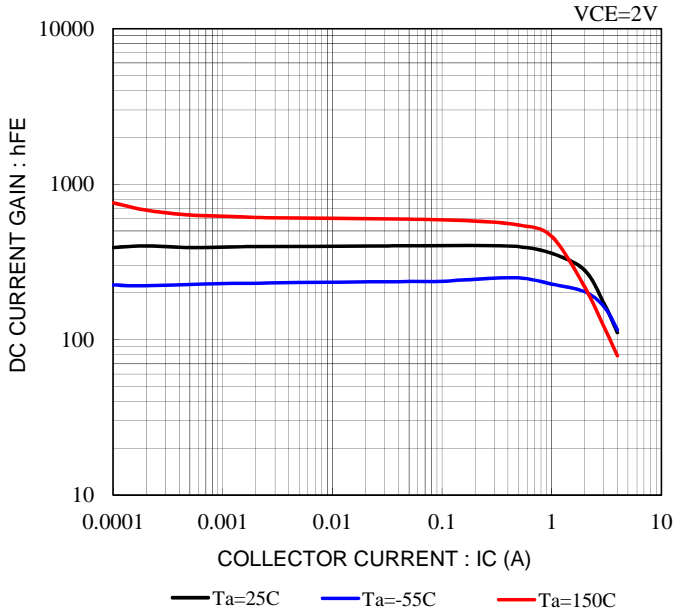


Fig.1 DC CURRENT GAIN VS.COLLECTOR CURRENT

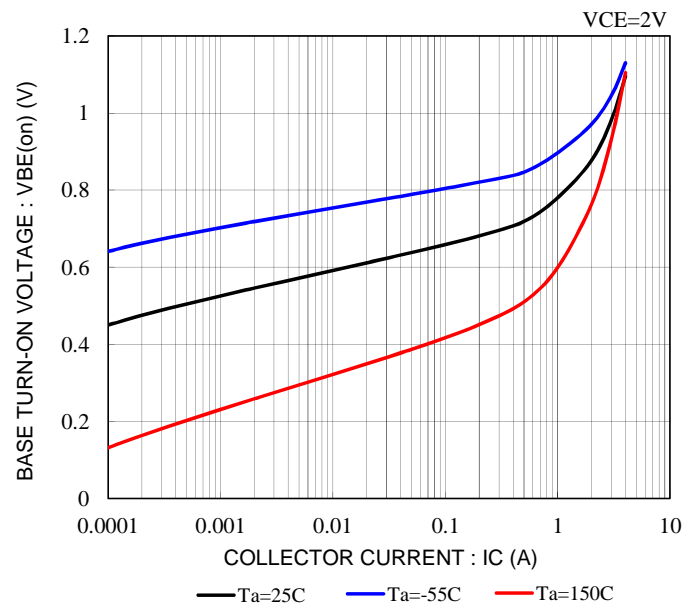


Fig.2 BASE-EMITTER TURN-ON VOLTAGE VS.COLLECTOR CURRENT

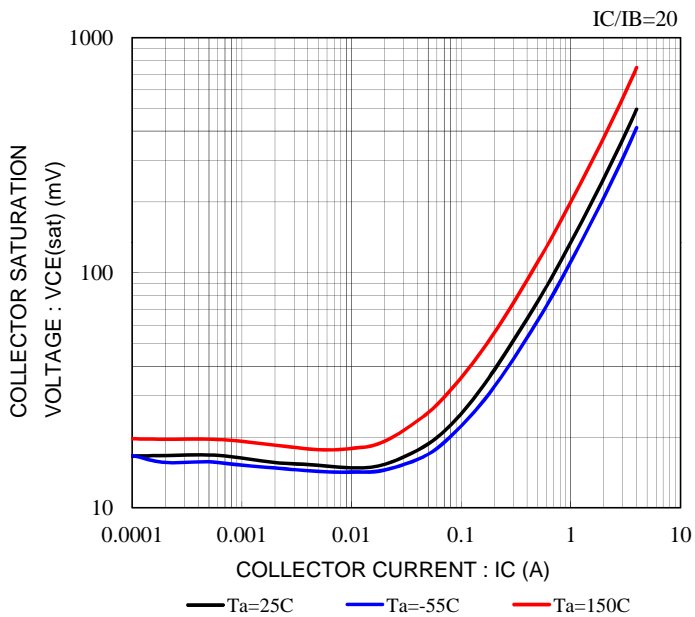


Fig.3 COLLECTOR-EMITTER SATURATION VOLTAGE VS.COLLECTOR CURRENT

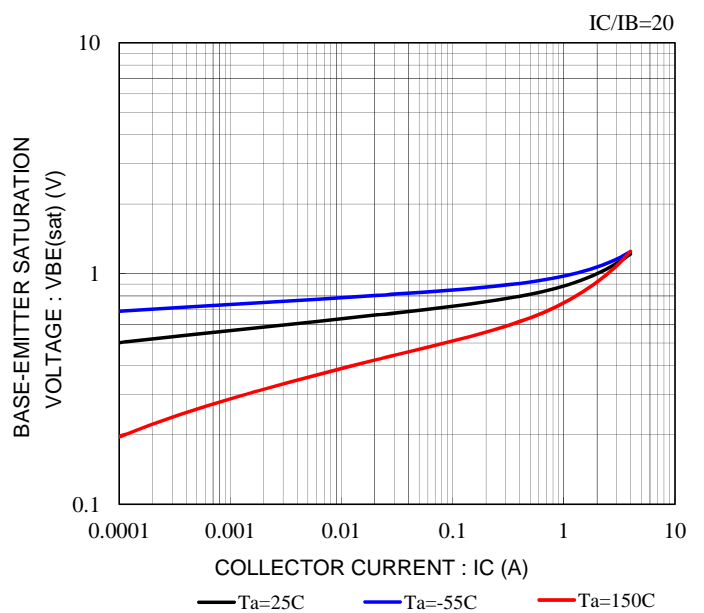


Fig.4 BASE-EMITTER SATURATION VOLTAGE VS.COLLECTOR CURRENT

LBSS4240LT1G,S-LBSS4240LT1G

ELECTRICAL CHARACTERISTIC CURVES

(Ta = 25°C)

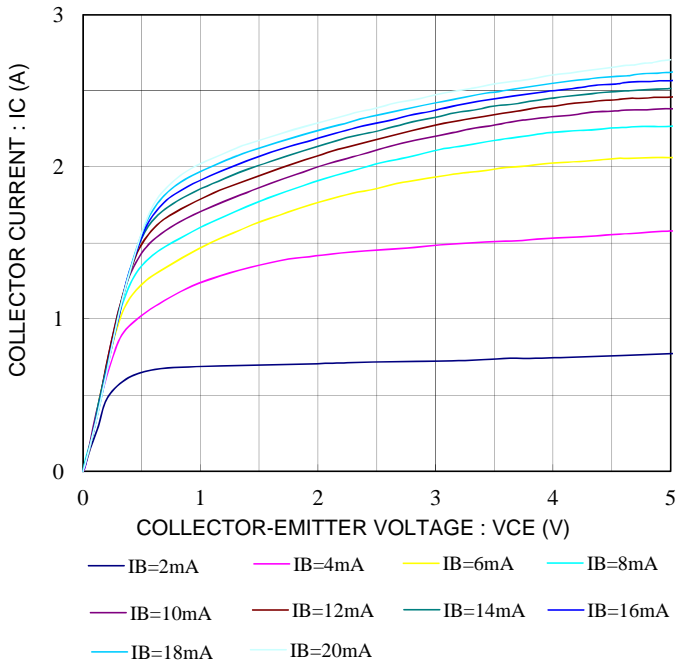


Fig.5 COLLECTOR CURRENT VS.COLLECTOR-EMITTER SATURATION VOLTAGE

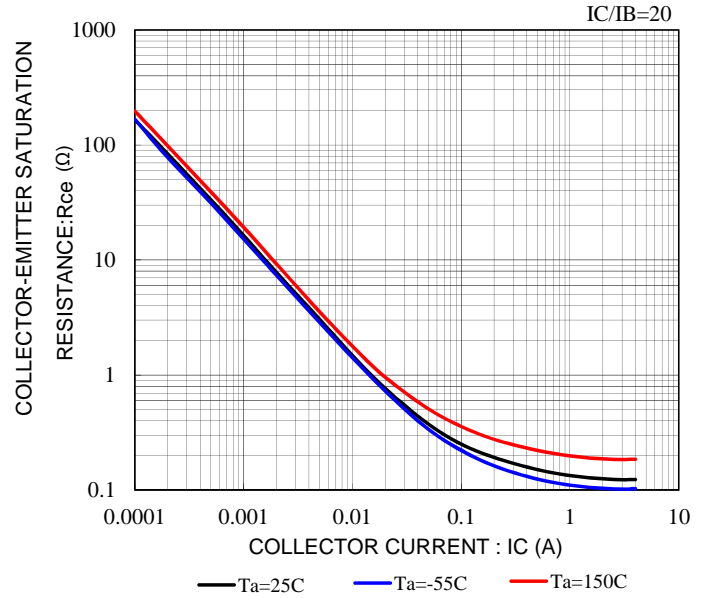


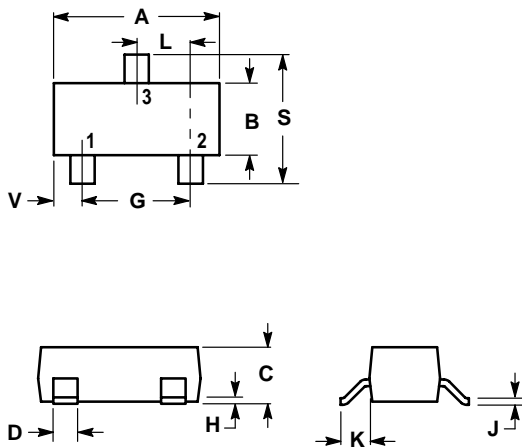
Fig.6 COLLECTOR-EMITTER SATURATION RESISTANCE VS.COLLECTOR CURRENT

LBSS4240LT1G,S-LBSS4240LT1G

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

