N0500S

R07DS0723EJ0100
Rev.1.00
Mar 30, 2012

NPN SILICON EPITAXIAL TRANSISTOR

FEATURES

- Complements to N0500R.
- V_{CEO} = 50 V
- $I_{C(DC)}$ = 0.7 A
- Miniature package SOT-23F (2SD1000: Package variation of 3pPoMM)

PRODUCT LINEUP

Part Number	Packing	Package Name	Package Code	Mass [TYP.]
N0500S-T1-AT	Tape 3000p/reel	SOT-23F	PVSF0003ZA-A	0.0126g

ABSOLUTE MAXIMUM RATINGS (T_a = 25°C)

Parameter	Symbol	Ratings	Unit
Collector to Base Voltage	V_{CBO}	60	V
Collector to Emitter Voltage	V_{CEO}	50	V
Emitter to Base Voltage	V_{EBO}	5.0	V
Collector Current (DC)	$I_{C(DC)}$	0.7	A
Collector Current (pulse) *1	$I_{C(pulse)}$	1.0	A
Total Power Dissipation	P_{T1}	0.2	W
Total Power Dissipation *2	P_{T2}	1.0	W
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	–55 to +150	°C

Note *1. PW ≤ 10 ms, Duty Cycle ≤ 50%
*2. FR-4 board size 2500 mm^2 × 1.6 mm, t ≤ 5 sec

ELECTRICAL CHARACTERISTICS (T_a = 25°C)

Parameter	Symbol	Condition	MIN.	TYP.	MAX.	Unit
Collector Cutoff Current	I_{CBO}	V_{CB} = 60 V, I_E = 0			100	nA
Emitter Cutoff Current	I_{EBO}	V_{EB} = 5.0 V, I_C = 0			100	nA
DC Current Gain	h_{FE1}*1	V_{CE} = 1.0 V, I_C = 100 mA	90	200	400	
DC Current Gain	h_{FE2}*1	V_{CE} = 1.0 V, I_C = 500 mA	50	150		
Collector Saturation Voltage	$V_{CE(sat)}$*1	I_C = 500 mA, I_B = 50 mA		0.12	0.4	V
Base Saturation Voltage	$V_{BE(sat)}$*1	I_C = 500 mA, I_B = 50 mA		0.9	1.2	V
Base to Emitter Voltage	V_{BE}*1	V_{CE} = 6.0 V, I_C = 10 mA	600	635	700	mV
Gain Bandwidth Product	f_T	V_{CE} = 6.0 V, I_E = –10 mA		80		MHz
Output Capacitance	C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1.0 MHz		10		pF

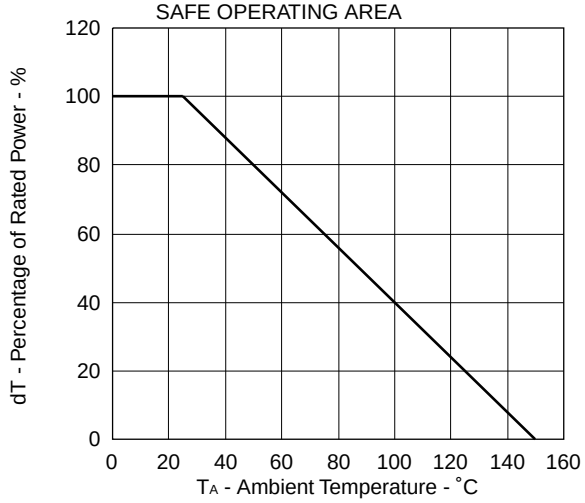
Note *1. Pulsed

h_{FE} Classification

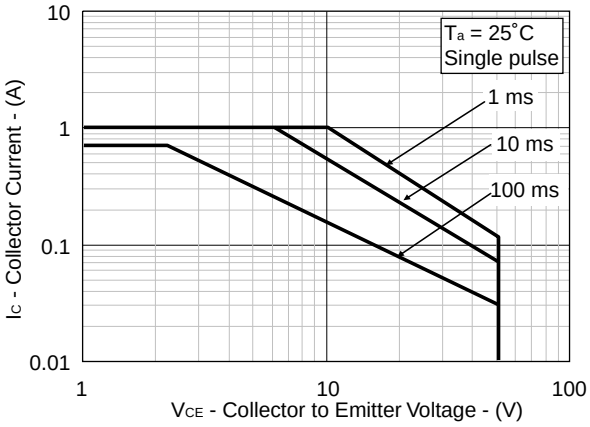
Marking	LM	LL	LK
hFE1	90 to 180	135 to 270	200 to 400

TYPICAL CHARACTERISTICS (T_a = 25°C)

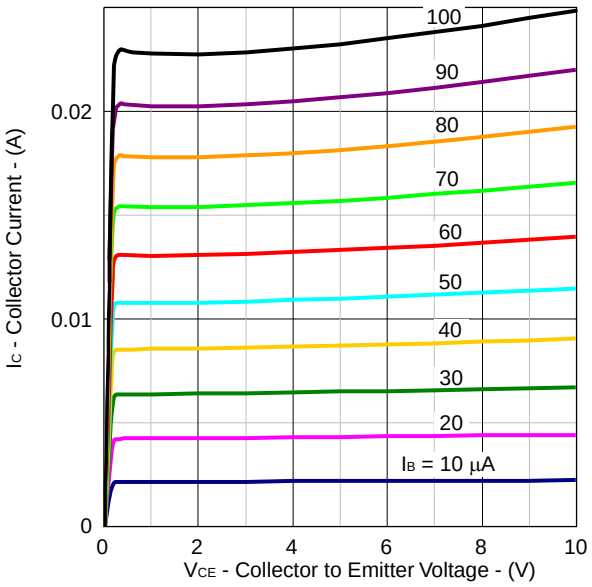
DERATING FACTOR FORWARD BIAS SAFE OPERATING AREA



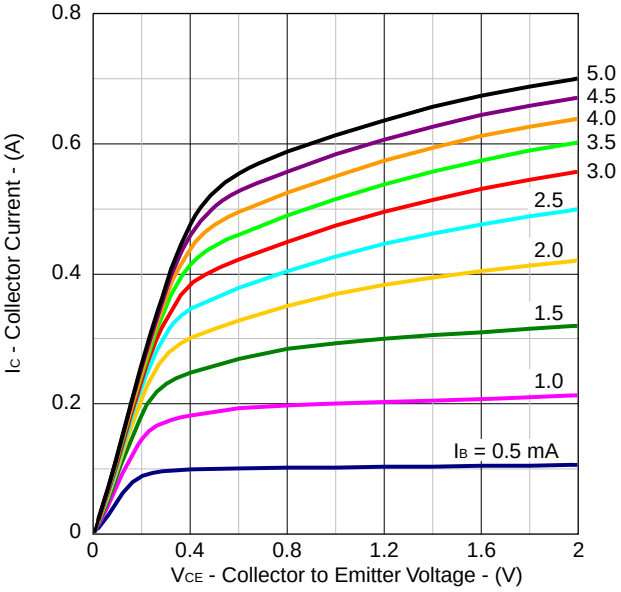
SAFE OPERATING AREA



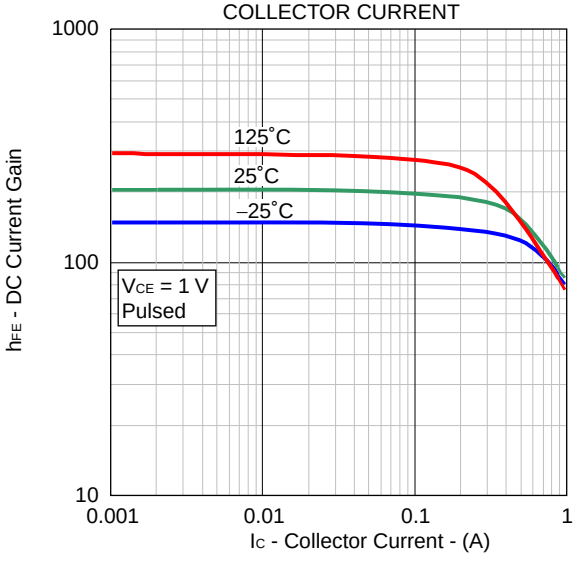
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



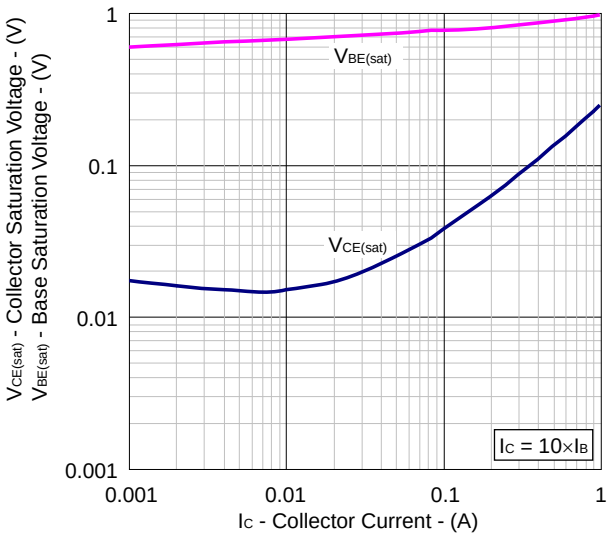
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



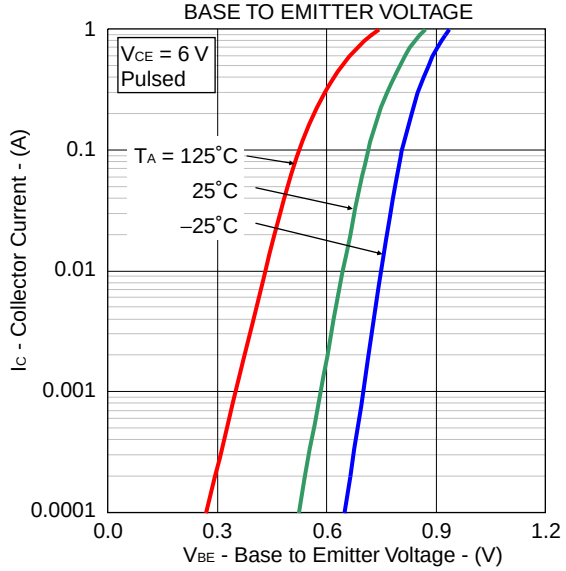
DC CURRENT GAIN vs. COLLECTOR CURRENT



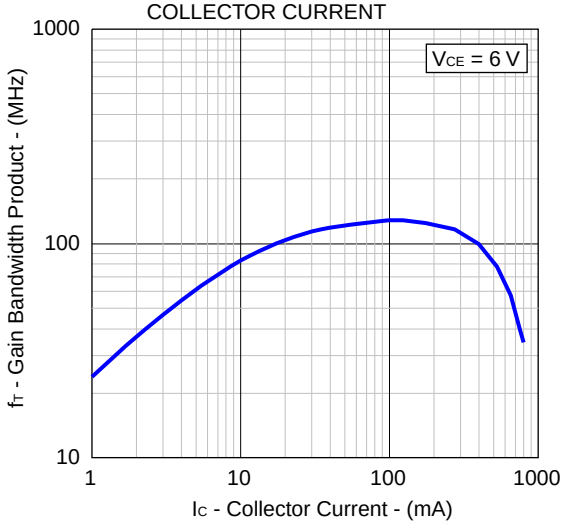
COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



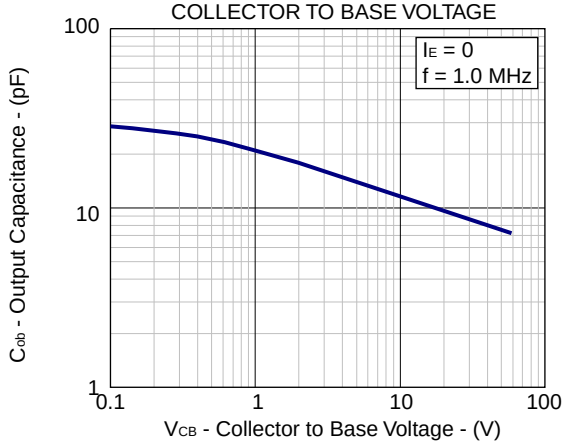
COLLECTOR CURRENT vs.
BASE TO EMITTER VOLTAGE



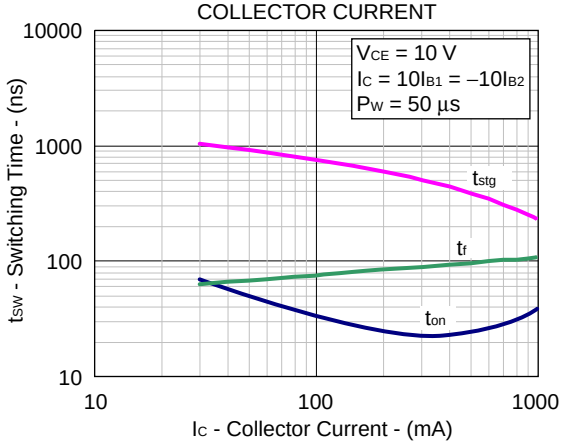
GAIN BANDWIDTH PRODUCT vs.
COLLECTOR CURRENT



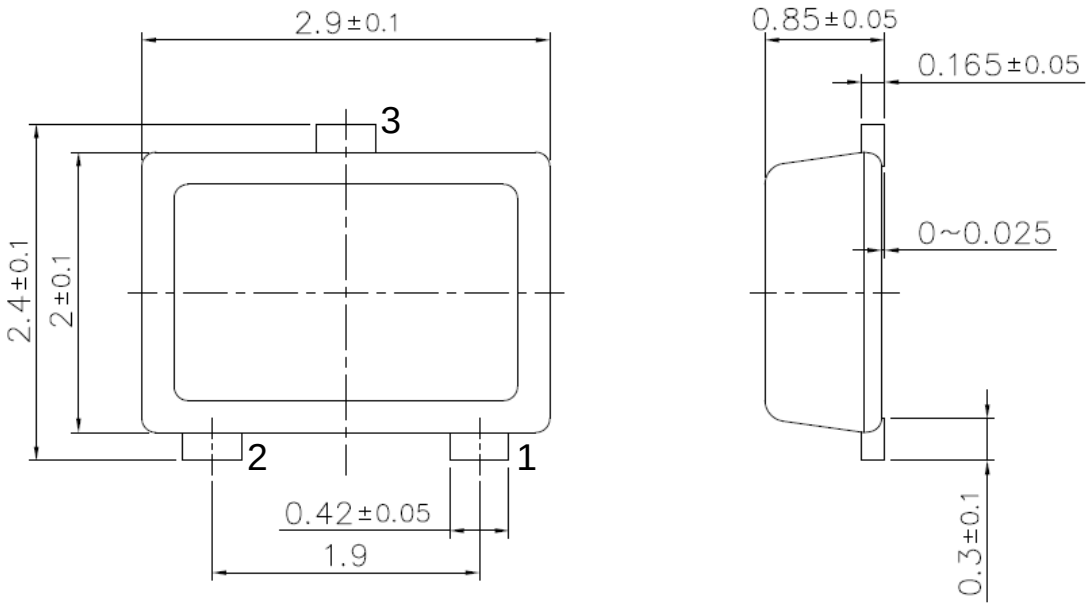
OUTPUT CAPACITANCE vs.
COLLECTOR TO BASE VOLTAGE



SWITCHING TIME vs.
COLLECTOR CURRENT



PACKAGE DRAWING (Unit: mm)



1: Emitter
2: Base
3: Collector

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