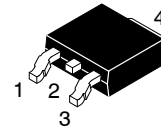


Bipolar Transistor, Low $V_{CE(sat)}$, NPN Single TP-FA

100 V, 2 A

2SC6099



DPAK / TP-FA
CASE 369AH

Features

- Adoption of FBET, MBIT Process
- Low Collector-to-Emitter Saturation Voltage
- High Allowable Power Dissipation
- Large Current Capacity
- High-Speed Switching
- This is a Pb-Free Device

Typical Applications

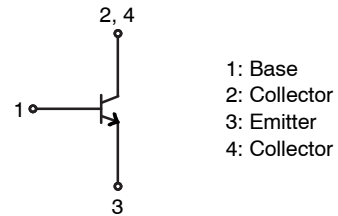
- DC / DC Converter
- Relay Drivers
- Lamp Drivers
- Motor Drivers
- Inverter

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

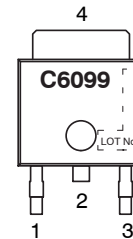
Symbol	Rating	Value	Unit
V_{CBO}	Collector-to-Base Voltage	120	V
V_{CES}	Collector-to-Emitter Voltage	120	V
V_{CEO}	Collector-to-Emitter Voltage	100	V
V_{EBO}	Emitter-to-Base Voltage	6.5	V
I_C	Collector Current	2	A
I_{CP}	Collector Current (Pulse)	3	A
I_B	Base Current	400	mA
P_C	Collector Dissipation	0.8	W
	Collector Dissipation	$T_C = 25^\circ\text{C}$	15
T_j	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature	-55 to +150	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

ELECTRICAL CONNECTION



MARKING DIAGRAM



ORDERING INFORMATION

Device	Package	Shipping†
2SC6099-TL-E	DPAK / TP-FA (Pb-Free)	700 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, [BRD8011/D](#).

2SC6099

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_{CBO}	Collector Cutoff Current	$V_{CB} = 80\text{ V}, I_E = 0\text{ A}$	–	–	1	μA
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 4\text{ V}, I_C = 0\text{ A}$	–	–	1	μA
h_{FE}	DC Current Gain	$V_{CE} = 5\text{ V}, I_C = 100\text{ mA}$	300	–	600	
f_T	Gain-Bandwidth Product	$V_{CE} = 10\text{ V}, I_C = 300\text{ mA}$	–	300	–	MHz
Cob	Output Capacitance	$V_{CB} = 10\text{ V}, f = 1\text{ MHz}$	–	13	–	pF
$V_{CE(sat)}$	Collector-to-Emitter Saturation Voltage	$I_C = 1\text{ A}, I_B = 100\text{ mA}$	–	110	165	mV
$V_{BE(sat)}$	Base-to-Emitter Saturation Voltage	$I_C = 1\text{ A}, I_B = 100\text{ mA}$	–	0.9	1.2	V
$V_{(BR)CBO}$	Collector-to-Base Breakdown Voltage	$I_C = 10\text{ }\mu\text{A}, I_E = 0\text{ A}$	120	–	–	V
$V_{(BR)CES}$	Collector-to-Emitter Breakdown Voltage	$I_C = 100\text{ }\mu\text{A}, R_{BE} = 0\text{ }\Omega$	120	–	–	V
$V_{(BR)CEO}$	Collector-to-Emitter Breakdown Voltage	$I_C = 1\text{ mA}, R_{BE} = \infty$	100	–	–	V
$V_{(BR)EBO}$	Emitter-to-Base Breakdown Voltage	$I_E = 10\text{ }\mu\text{A}, I_C = 0\text{ A}$	6.5	–	–	V
t_{on}	Turn-On Time	See specified Test Circuit		40	–	ns
t_{stg}	Storage Time			1100	–	ns
t_f	Fall Time			40	–	ns

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

Switching Time Test Circuit

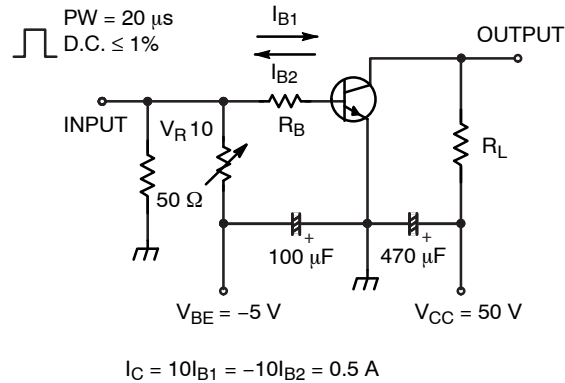


Figure 1. Switching Time Test Circuit

TYPICAL CHARACTERISTICS

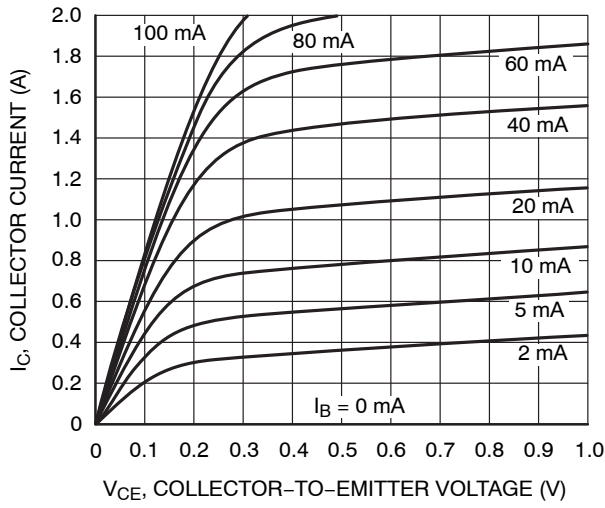


Figure 2. $I_C - V_{CE}$

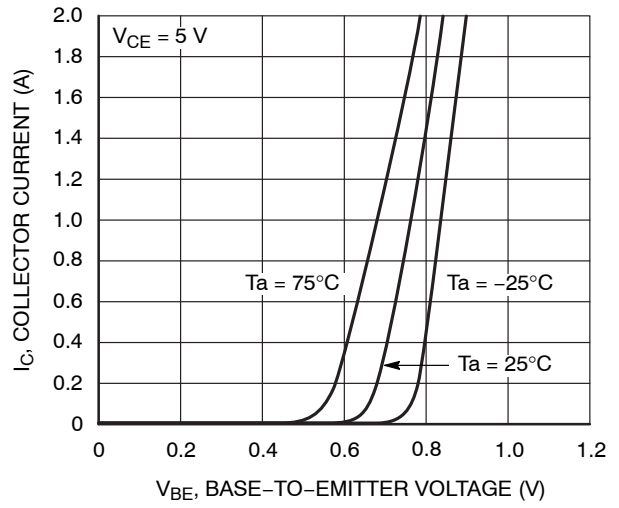


Figure 3. $I_C - V_{BE}$

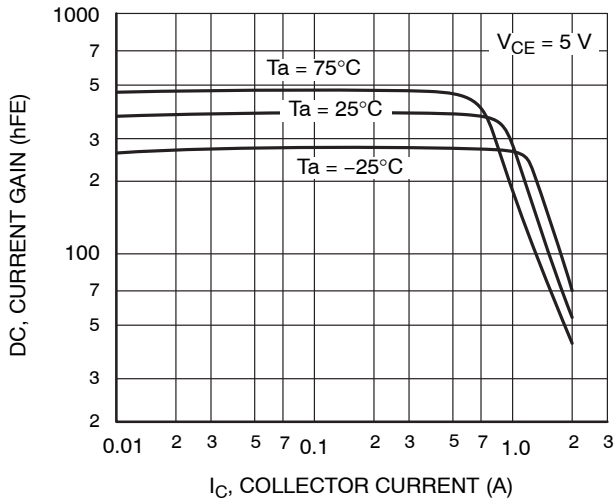


Figure 4. $h_{FE} - I_C$

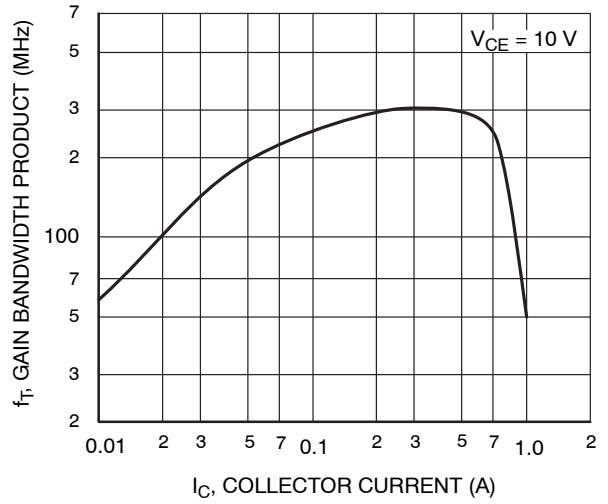


Figure 5. $f_T - I_C$

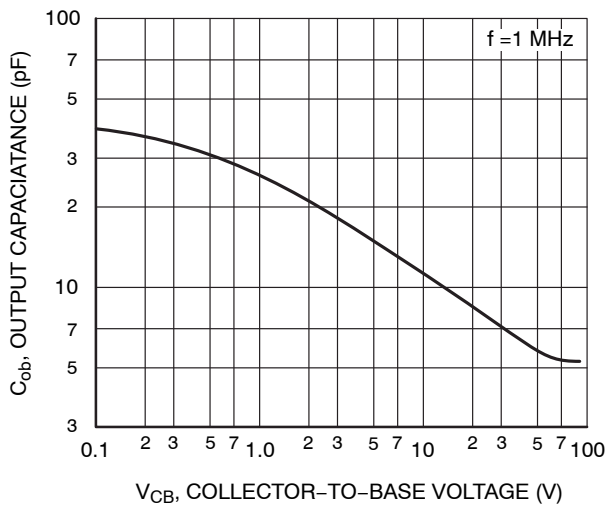


Figure 6. $C_{ob} - V_{CB}$

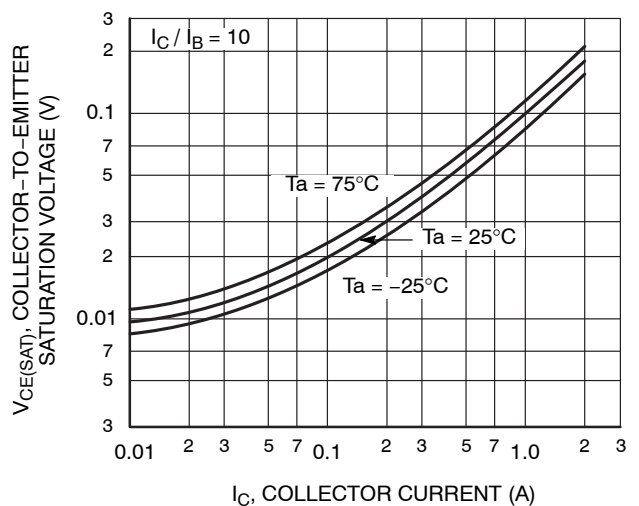


Figure 7. $V_{CE(sat)} - I_C$

TYPICAL CHARACTERISTICS (continued)

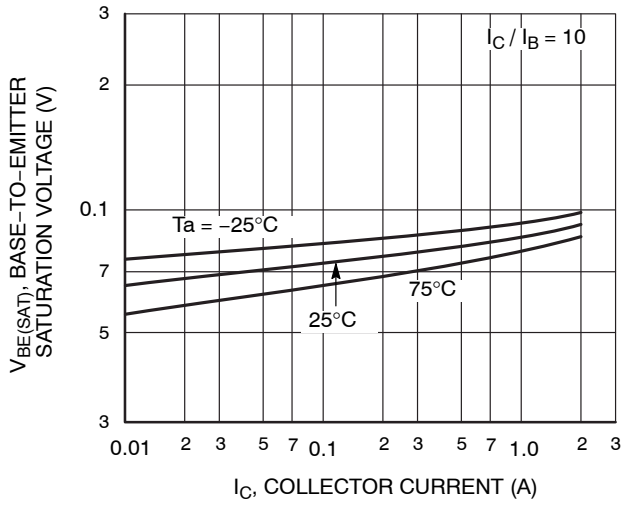


Figure 10. $V_{BE(sat)} - I_C$

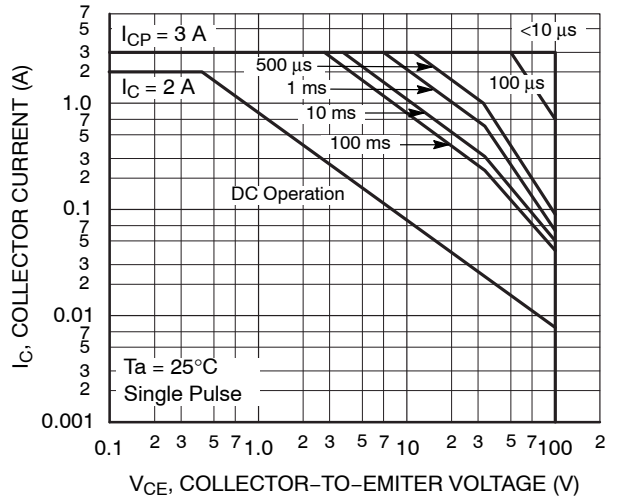


Figure 11. ASO

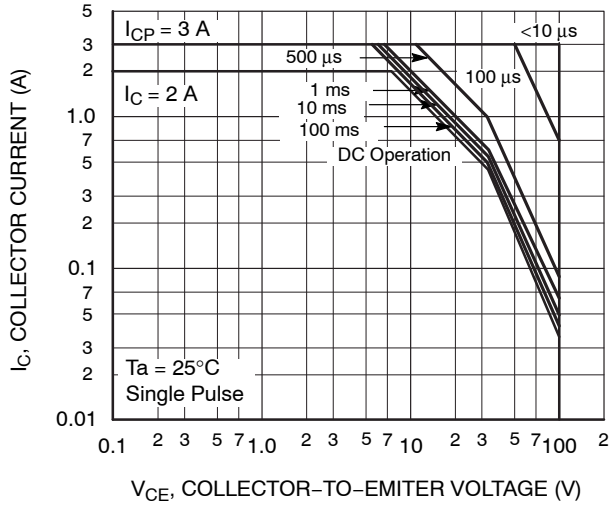


Figure 9. ASO

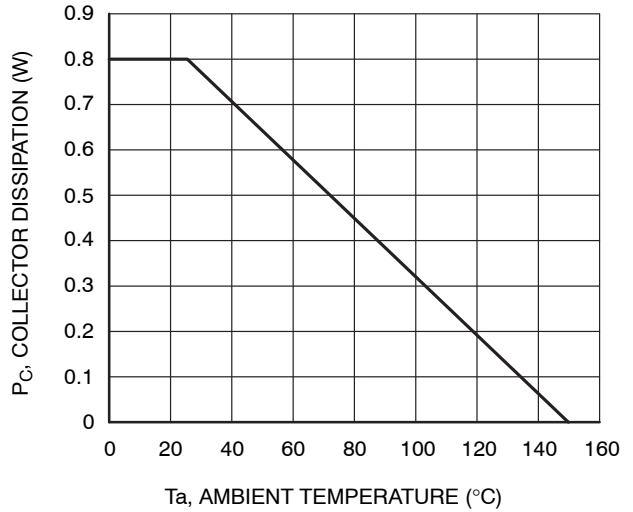


Figure 12. $P_C - T_a$

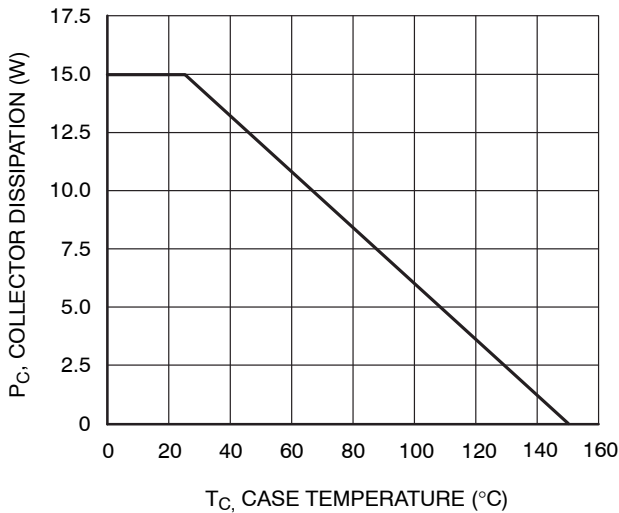
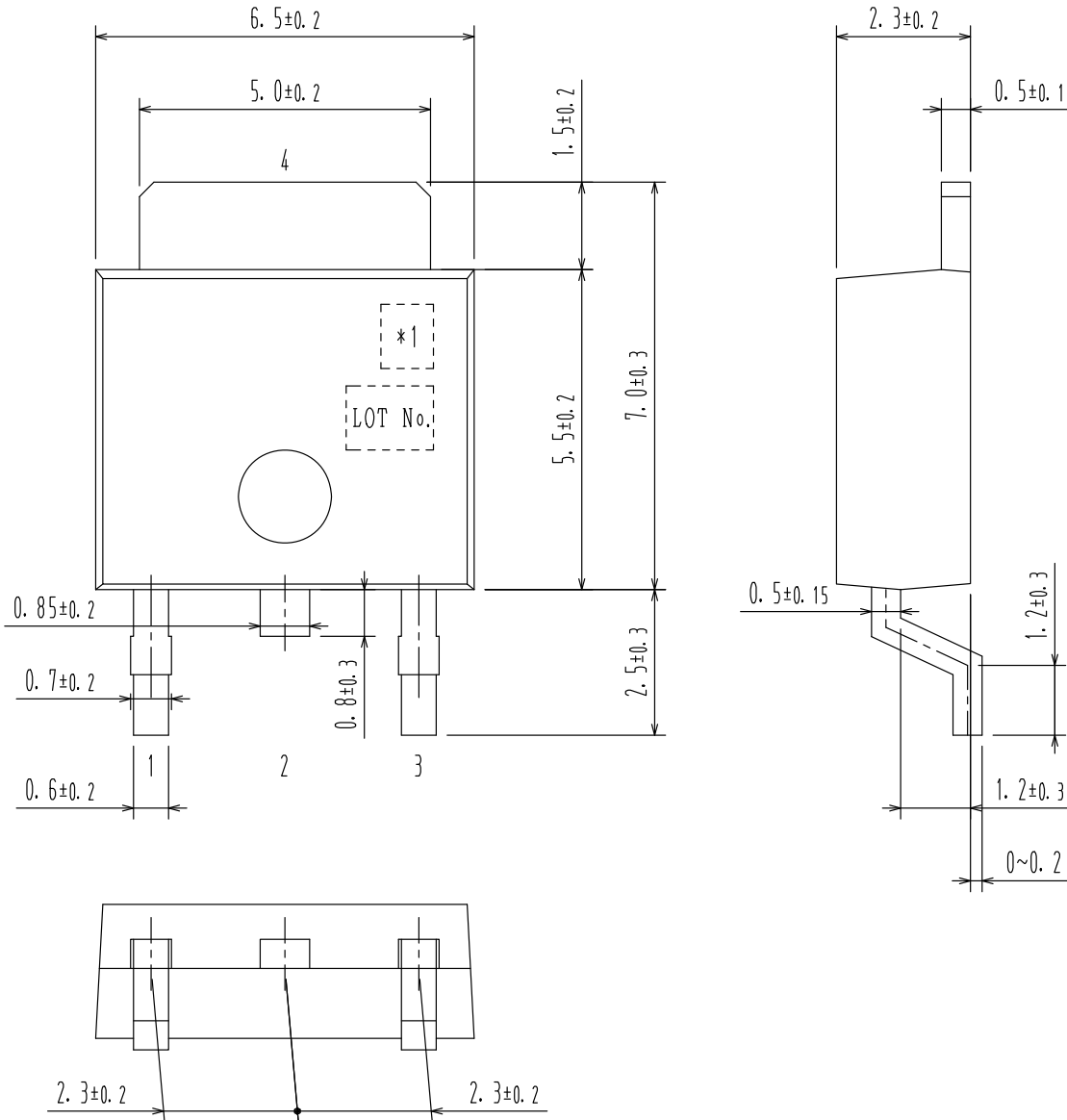


Figure 8. $P_C - T_C$

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

DPAK / TP-FA
CASE 369AH
ISSUE O

DATE 30 JAN 2012



Pin 2 is idle pin with electrical designation only carried.

- 1:
- 2:
- 3:
- *1: Lot indication 4:

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