2SA2153

Bipolar Transistor
–50V, –2A, Low VCE(sat), PNP Single

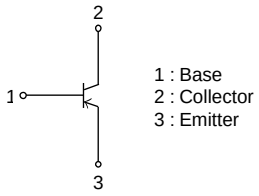
ON Semiconductor®

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Features
- Adoption of MBIT Process
- Low Saturation Voltage
- Large Current Capacity and Wide ASO

Typical Applications
- Voltage Regulators
- Relay Drivers
- Lamp Drivers
- Electrical Equipment

ELECTRICAL CONNECTION



SPECIFICATIONS

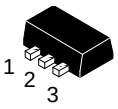
ABSOLUTE MAXIMUM RATING at Ta = 25°C (Note 1, 2)

Parameter		Symbol	Value	Unit
Collector to Base Voltage		V_{CBO}	–50	V
Collector to Emitter Voltage		V_{CEO}	–50	V
Emitter to Base Voltage		V_{EBO}	–6	V
Collector Current		I_C	–2	A
Collector Current (Pulse)		I_{CP}	–4	A
Base Current		I_B	–400	mA
Collector Dissipation	(Note 2)	P_C	1.3	W
	Tc=25°C		3.5	W
Junction Temperature		Tj	150	°C
Storage Temperature		Tstg	–55 to +150	°C

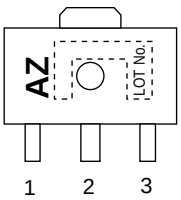
Note 1 : Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Note 2 : Surface mounted on ceramic substrate($450mm^2 \times 0.8mm$)

MARKING



SOT-89 / PCP-1



ORDERING INFORMATION

See detailed ordering and shipping information on page 5 of this data sheet.

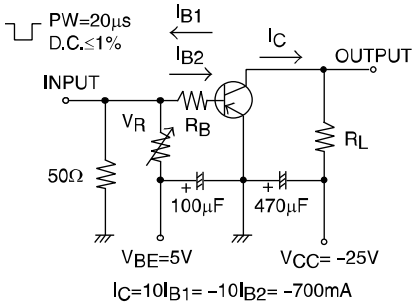
© Semiconductor Components Industries, LLC, 2016

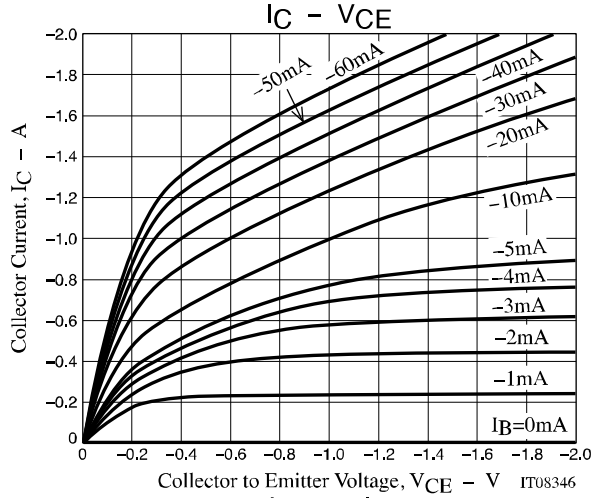
ELECTRICAL CHARACTERISTICS at Ta = 25°C (Note 3)

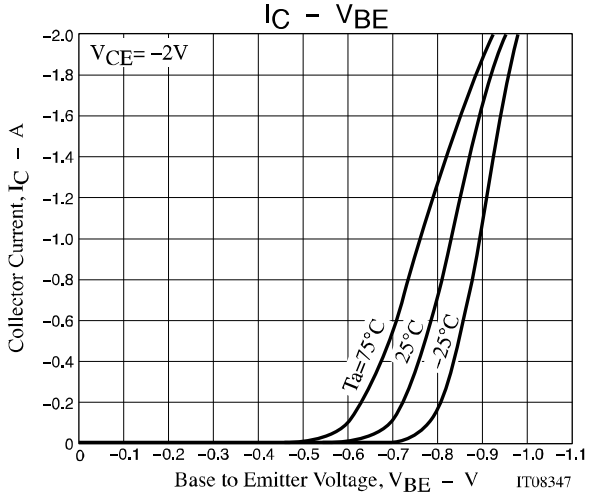
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=–40V, I_E=0A			–1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=–4V, I_C=0A			–1	μA
DC Current Gain	$h_{FE}1$	V_{CE}=–2V, I_C=–100mA	200		560	
	$h_{FE}2$	V_{CE}=–2V,I_C=–1.5A	40			
Gain-Bandwidth Product	f_T	V_{CE}=–10V, I_C=–300mA		420		MHz
Output Capacitance	Cob	V_{CB}=–10V, f=1MHz		16		pF
Collector to Emitter Saturation Voltage	V_{CE}(sat)	I_C=–1A, I_B=–50mA		–0.2	–0.4	V
Base to Emitter Saturation Voltage	V_{BE}(sat)	I_C=–1A, I_B=–50mA		–0.9	–1.2	V
Collector to Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=–10μA, I_E=0A	–50			V
Collector to Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=–1mA, R_{BE}=∞	–50			V
Emitter to Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=–10μA, I_C=0A	–6			V
Turn-On Time	t_{on}	See specified Test Circuit		35		ns
Storage Time	t_{stg}			200		ns
Fall Time	t_f			24		ns

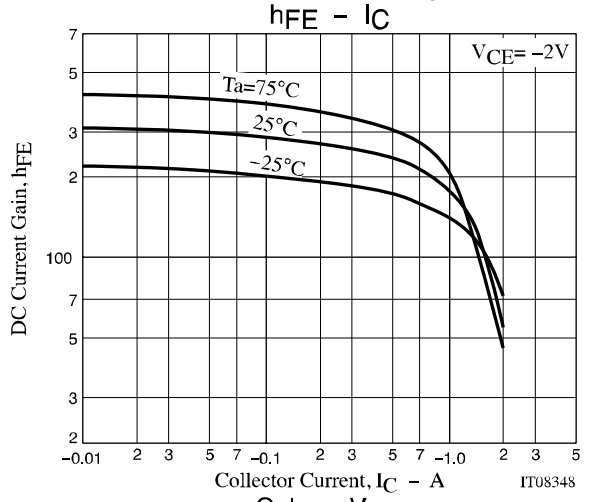
Note 3 : Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

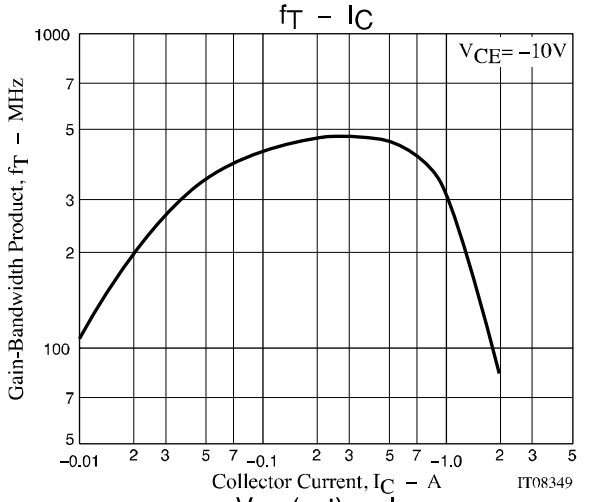
Switching Time Test Circuit

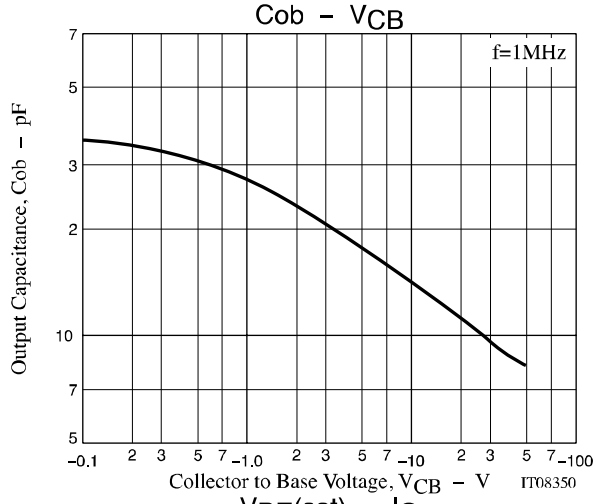


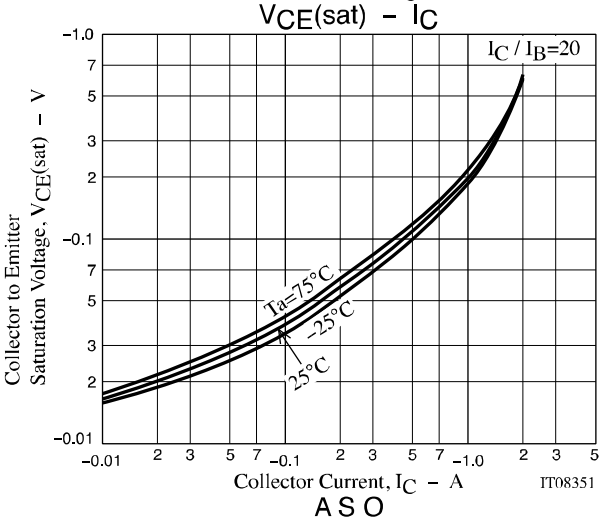

IC – VCE
Collector Current, IC – A
Collector to Emitter Voltage, VCE – V
IT08346
–50mA
–60mA
–40mA
–30mA
–20mA
–10mA
–5mA
–4mA
–3mA
–2mA
–1mA
IB=0mA

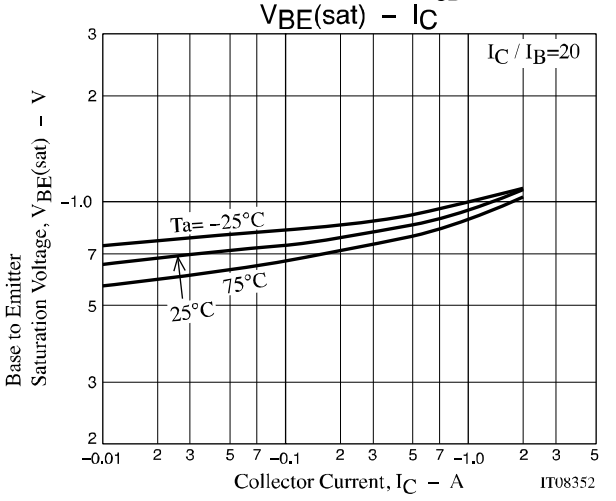

IC – VBE
VCE= –2V
Collector Current, IC – A
Base to Emitter Voltage, VBE – V
IT08347
Ta=75°C
25°C
–25°C

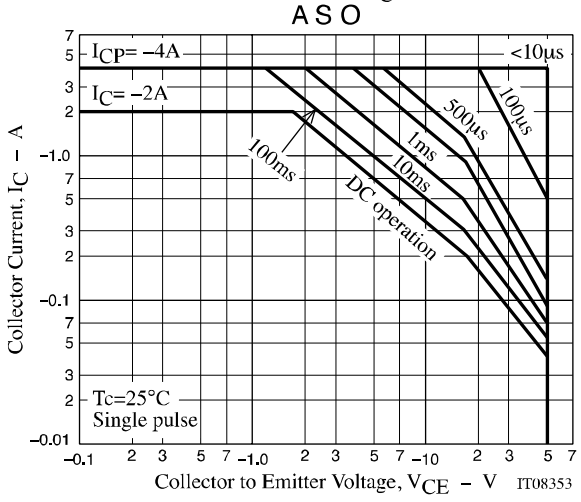

hFE – IC
VCE= –2V
DC Current Gain, hFE
Collector Current, IC – A
IT08348
Ta=75°C
25°C
–25°C

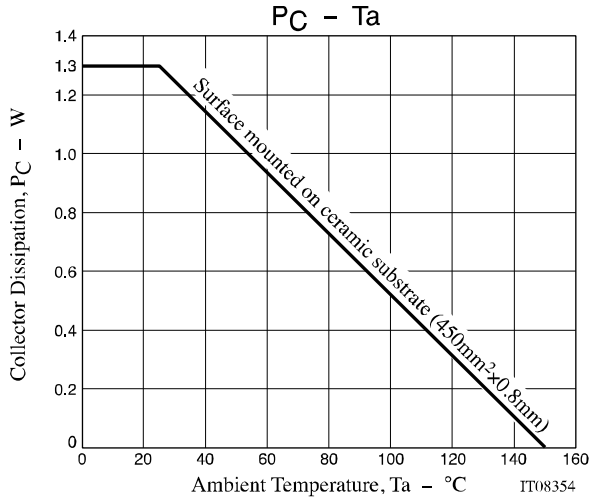

fT – IC
VCE= –10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT08349

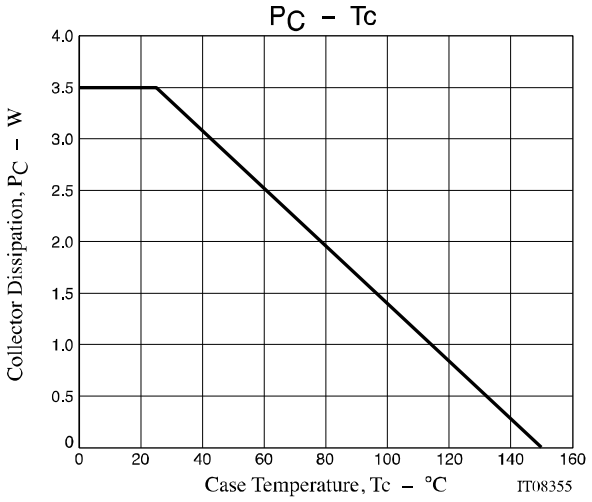

Cob – VCB
f=1MHz
Output Capacitance, Cob – pF
Collector to Base Voltage, VCB – V
IT08350


VCE(sat) – IC
IC / IB=20
Collector to Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT08351
Ta=75°C
–25°C
25°C


VBE(sat) – IC
IC / IB=20
Base to Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT08352
Ta= –25°C
75°C
25°C


A S O
ICP= –4A
IC= –2A
<10µs
100µs
500µs
1ms
10ms
100ms
DC operation
Tc=25°C
Single pulse
Collector Current, IC – A
Collector to Emitter Voltage, VCE – V
IT08353

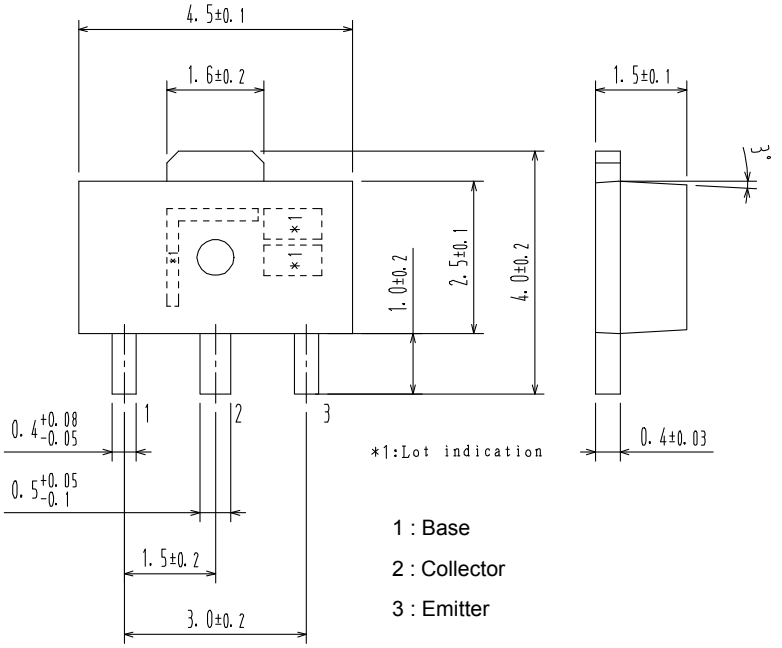

PC – Ta
Collector Dissipation, PC – W
1.4
1.3
1.2
1.0
0.8
0.6
0.4
0.2
0
0
20
40
60
80
100
120
140
160
Surface mounted on ceramic substrate (450mm2×0.8mm)
Ambient Temperature, Ta – °C
IT08354

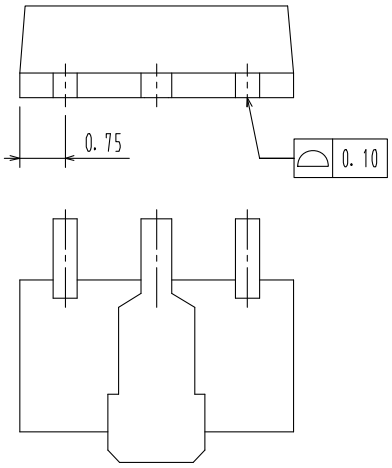

PC – Tc
Collector Dissipation, PC – W
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0
0
20
40
60
80
100
120
140
160
Case Temperature, Tc – °C
IT08355

PACKAGE DIMENSIONS

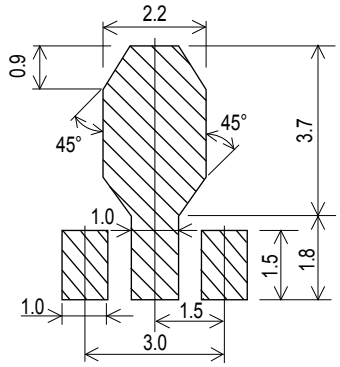
unit : mm

SOT-89 / PCP-1
CASE 419AU
ISSUE O





Recommended Soldering Footprint



ORDERING INFORMATION

Device	Marking	Package	Shipping (Qty / Packing)
2SA2153-TD-E	AZ	SOT-89 / PCP-1 (Pb-Free)	1,000 / 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. http://www.onsemi.com/pub_link/Collateral/BRD8011-D.PDF

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