Ordering number : EN1034C

SANYO Semiconductors
DATA SHEET

2SD1230 — NPN Epitaxial Planar Silicon Darlington Transistor
Driver Applications

Applications

- Motor drivers, printer hammer drivers, relay drivers, voltage reguraltor control.

Features

- High DC current gain.
- High current capacity and wide ASO.
- Low saturation voltage.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		110	V
Collector-to-Emitter Voltage	V_{CEO}		100	V
Emitter-to-Base Voltage	V_{EBO}		6	V
Collector Current	I_C		8	A
Collector Current (Pulse)	I_{CP}		12	A
Collector Dissipation	P_C		2.5	W
		Tc=25°C	60	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=80V, I_E=0A			0.1	mA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V, I_C=0A			3	mA
DC Current Gain	h_{FE}	V_{CE}=3V, I_C=4A	1500	4000		
Gain-Bandwidth Product	f_T	V_{CE}=5V, I_C=4A		20		MHz

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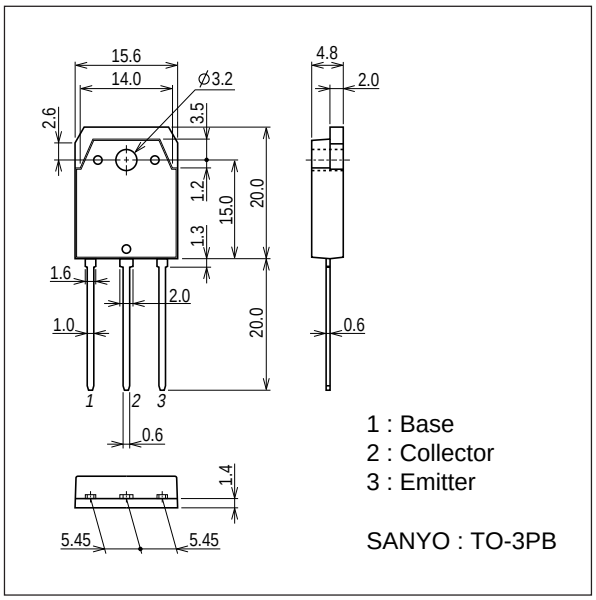
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=4A, I_B=8mA		0.9	1.5	V
Base-to-Emitterr Saturation Voltage	V_{BE}(sat)	I_C=4A, I_B=8mA			2.0	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=5mA, I_E=0A	110			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=50mA, R_{BE}=∞	100			V
Turn-ON Time	t_{on}	See specified Test Circuit		0.6		μs
Storage Time	t_{stg}	See specified Test Circuit		4.8		μs
Fall Time	t_f	See specified Test Circuit		1.6		μs

Package Dimensions

unit : mm (typ)

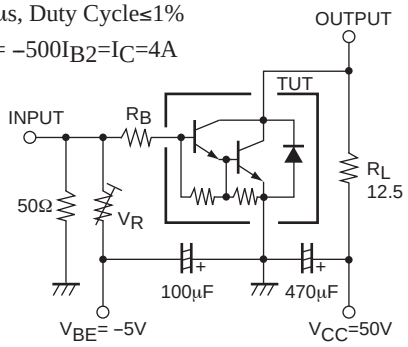
7503-003



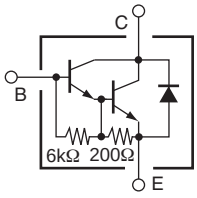
Switching Time Test Circuit

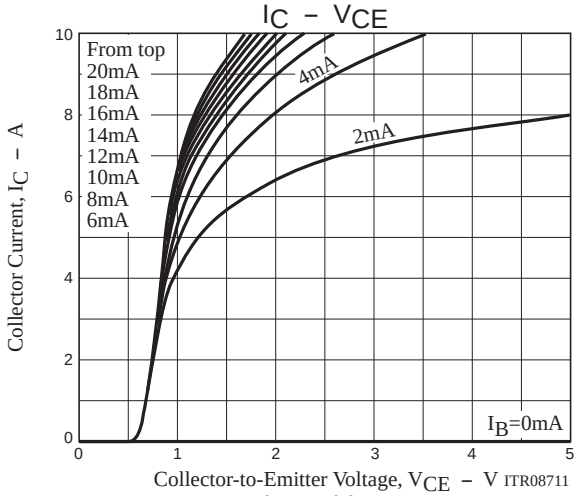
PW=50μs, Duty Cycle≤1%

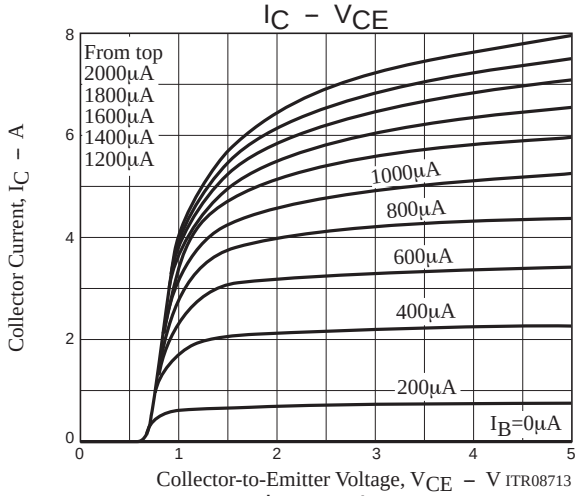
$500I_{B1}$= −$500I_{B2}$=I_C=4A

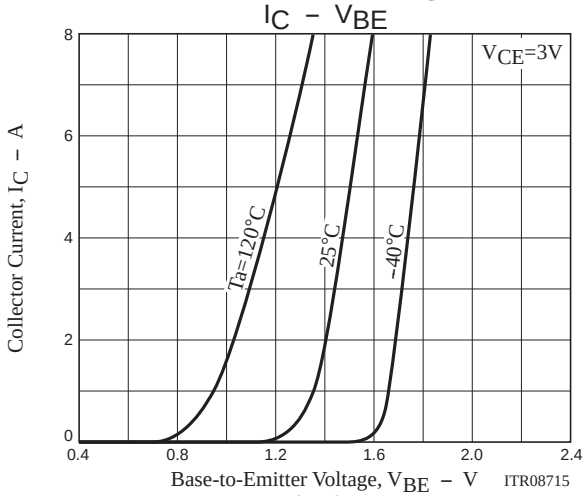


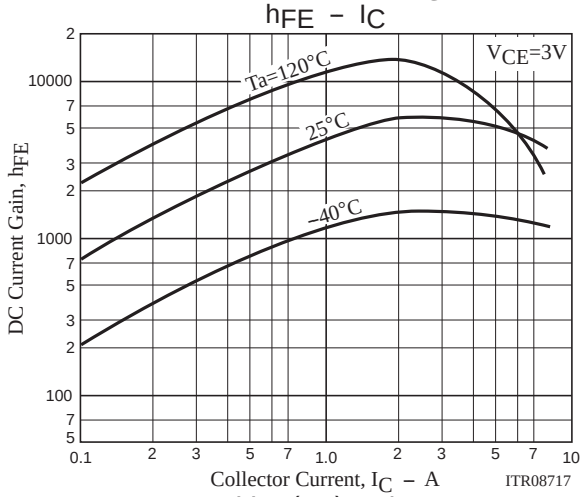
Electrical Connection

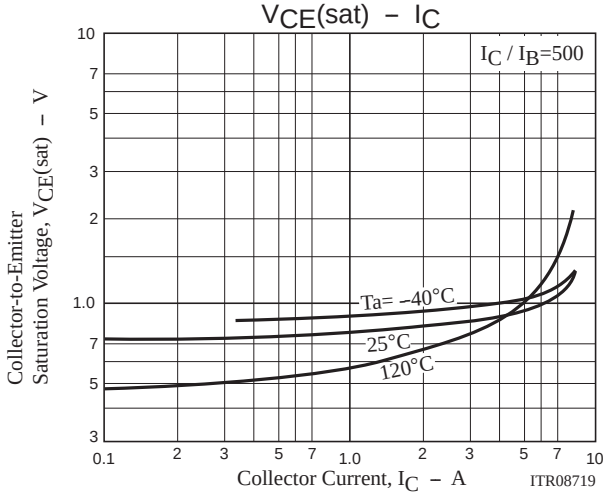


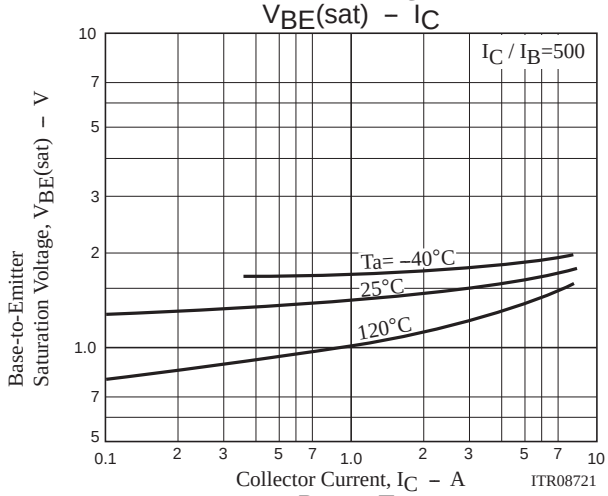

IC – VCE
From top
20mA
18mA
16mA
14mA
12mA
10mA
8mA
6mA
4mA
2mA
IB=0mA
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR08711

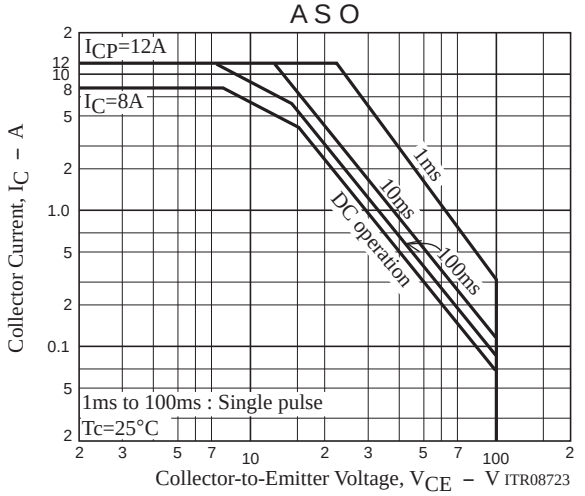

IC – VCE
From top
2000μA
1800μA
1600μA
1400μA
1200μA
1000μA
800μA
600μA
400μA
200μA
IB=0μA
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR08713

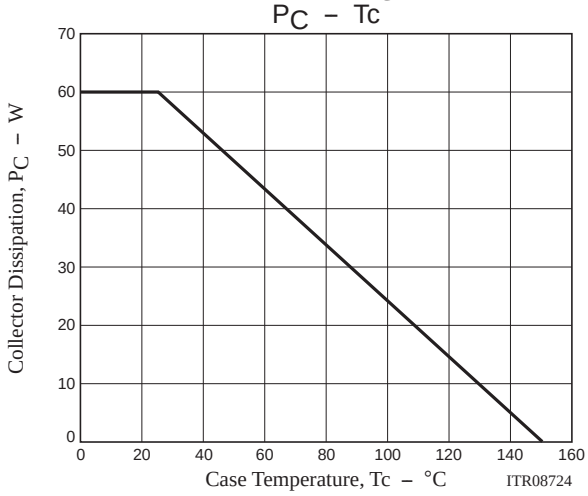

IC – VBE
VCE=3V
Ta=120°C
25°C
–40°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
ITR08715


hFE – IC
VCE=3V
Ta=120°C
25°C
–40°C
DC Current Gain, hFE
Collector Current, IC – A
ITR08717


VCE(sat) – IC
IC / IB=500
Ta= –40°C
25°C
120°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR08719


VBE(sat) – IC
IC / IB=500
Ta= –40°C
25°C
120°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
ITR08721


A S O
ICP=12A
IC=8A
1ms
10ms
DC operation
100ms
1ms to 100ms : Single pulse
Tc=25°C
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR08723


PC – Tc
Collector Dissipation, PC – W
Case Temperature, Tc – °C
ITR08724