Ordering number:EN2230B

NPN Triple Diffused Planar Silicon Darlington Transistor

2SD1838

Driver Applications

Applications

· Suitable for use in switching of L load (motor drivers, printer hammer drivers, relay drivers).

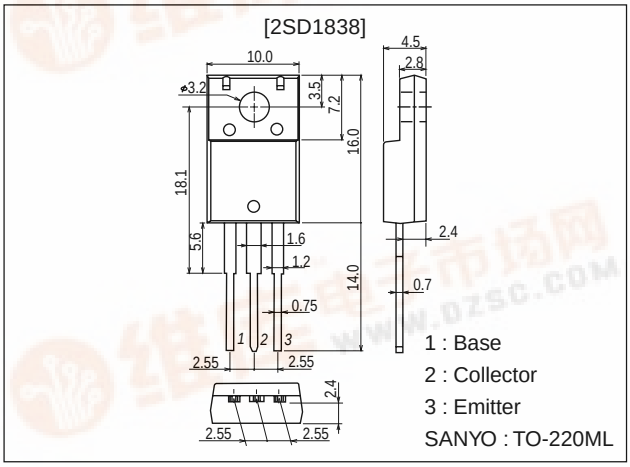
Features

· High DC current gain.
· Large current capacity
· Wide ASO.
· On-chip Zener diode of 60±10V between collector and base.
· Uniformity in collector-to-base breakdown voltage due to adoption of accurate impurity diffusion process.
· High inductive load handling capability.
· Micaless package facilitating mounting.

Package Dimensions

unit:mm

2041A



Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	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		5	A
Collector Current (Pulse)	I_{CP}		8	A
Base Current	I_B		0.5	A
Collector Dissipation	P_C		2.0	W
		Tc=25˚C	25	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

* : With Zener diode of (60±10V).

Electrical Characteristics at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=40V, I_E=0			100	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V, I_C=0			3	mA
DC Current Gain	h_{FE}	V_{CE}=3V, I_C=2.5A	1000	4000		
Gain-Bandwidth Product	f_T	V_{CE}=5V, I_C=2.5A		20		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=2.5A, I_B=5mA		0.9	1.5	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=2.5A, I_B=5mA			2.0	V

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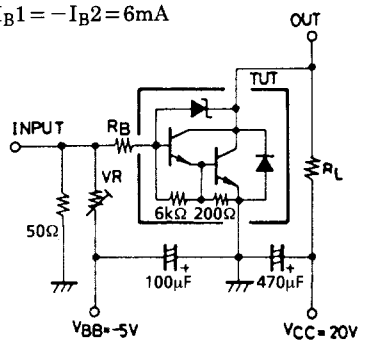
Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=5mA, I_E=0	50	60	70	V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=50mA, R_{BE}=∞	50	60	70	V
Inductive Load Handling Capability	Es/b	L=100mH, R_{BE}=100Ω	50			mJ
Rise Time	t_{on}	See specified Test Circuit. V_{CC}=20V, I_C=3.0A, I_{B1}=–I_{B2}=6mA		0.6		μs
Storage Time	t_{stg}	See specified Test Circuit. V_{CC}=20V, I_C=3.0A, I_{B1}=–I_{B2}=6mA		4.0		μs
Fall Time	t_f	See specified Test Circuit. V_{CC}=20V, I_C=3.0A, I_{B1}=–I_{B2}=6mA		1.5		μs

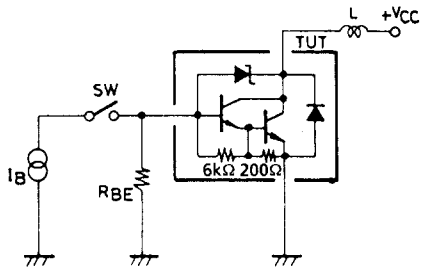
Specified Test Circuit

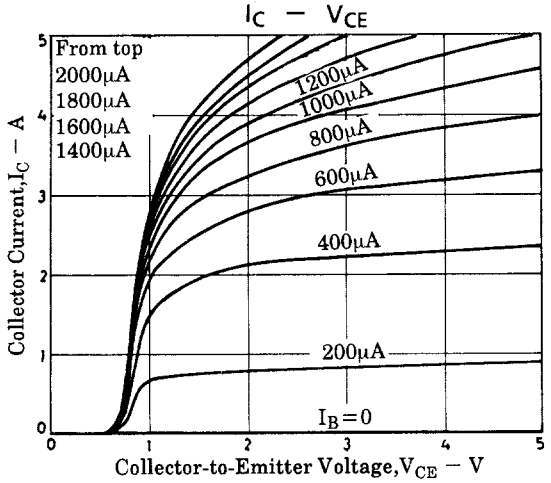
PW=50μs, Duty Cycle≦1%
I_{B1}=–I_{B2}=6mA

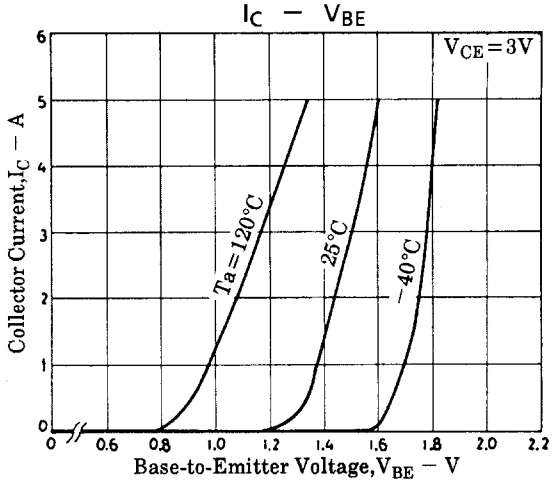


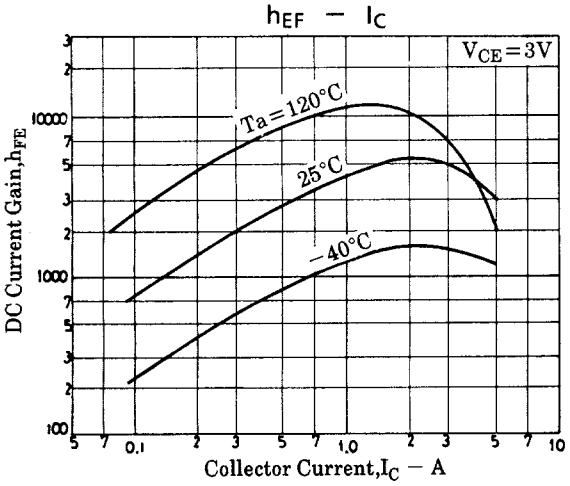
Es/b Test Circuit

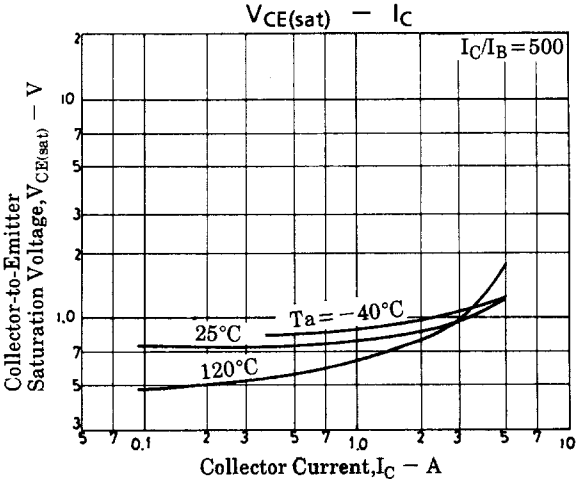
V_{CC}=20V, R_{BE}=100Ω
L=100mH



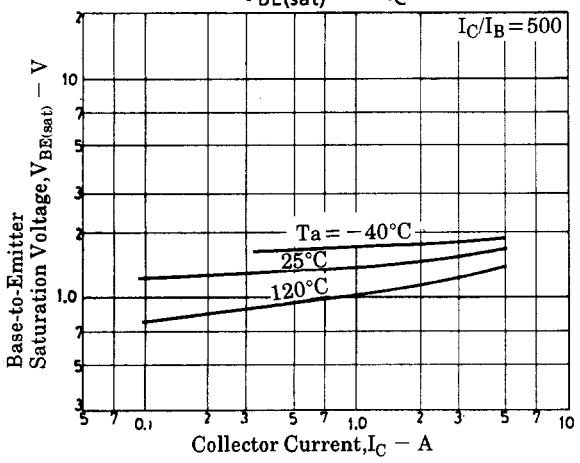




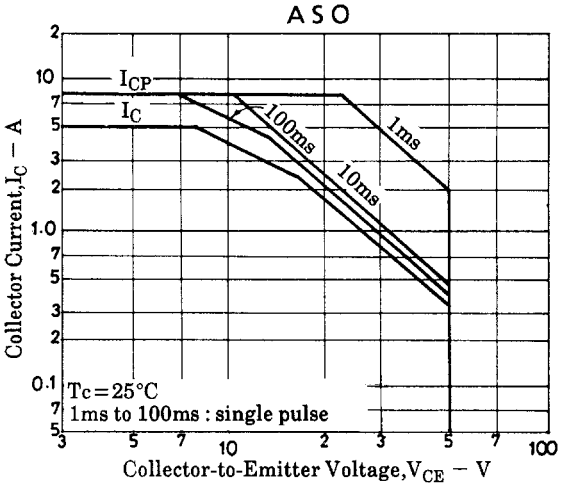




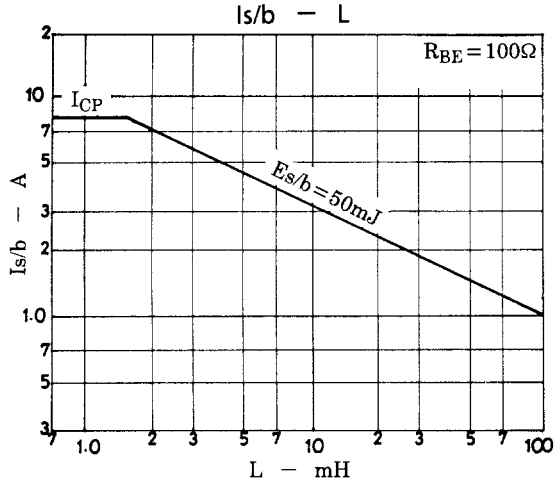
$V_{BE(sat)}$ – I_C



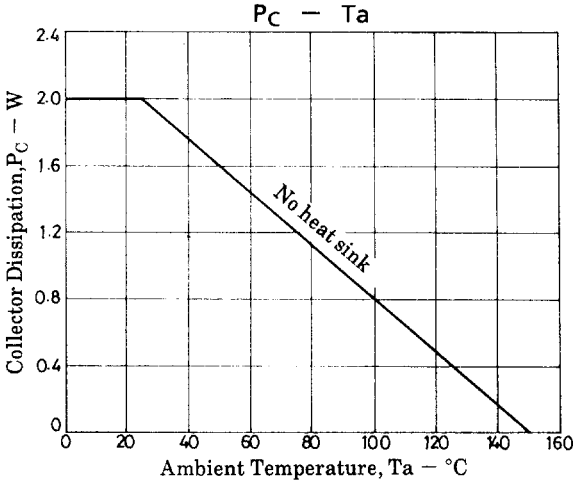
ASO



Is/b – L



P_C – Ta



P_C – Tc