



2SD1838 — NPN Triple Diffused Planar Silicon Darlington Transistor

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 $60\pm 10V$ 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.

Specifications

Absolute Maximum Ratings at $T_a=25^\circ C$

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
		$T_c=25^\circ C$	25	W
Junction Temperature	T_j		150	$^\circ C$
Storage Temperature	T_{stg}		-55 to +150	$^\circ C$

* : With Zener diode of ($60\pm 10V$).

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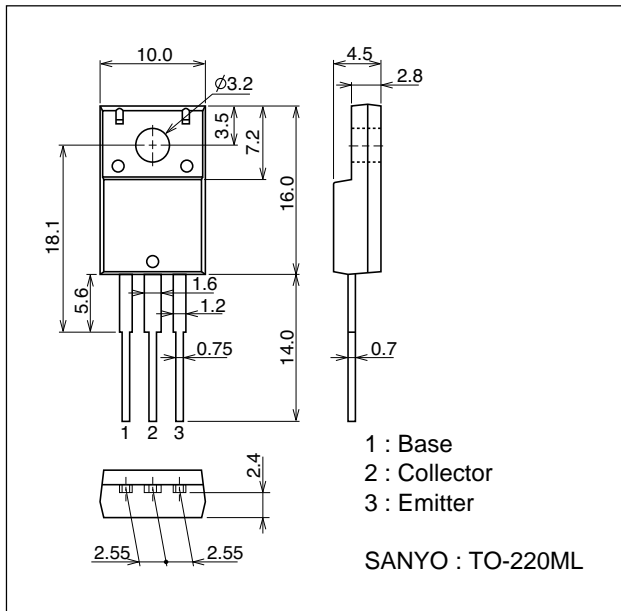
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Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=40V, I_E=0A$			100	μA
Emitter Cutoff Current	I_{EBO}	$V_{BE}=5V, I_C=0A$			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
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=5mA, I_E=0A$	50	60	70	V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=50mA, R_{BE}=\infty$	50	60	70	V
Inductive Load Handling Capability	Es/b	$L=100mH, R_{BE}=100\Omega$	50			mJ
Turn-ON Time	t_{on}	See specified Test Circuit. $V_{CC}=200V, I_C=3.0A, I_{B1}=-I_{B2}=6mA$		0.6		μs
Storage Time	t_{stg}	See specified Test Circuit. $V_{CC}=200V, I_C=3.0A, I_{B1}=-I_{B2}=6mA$		4.0		μs
Fall Time	t_f	See specified Test Circuit. $V_{CC}=200V, I_C=3.0A, I_{B1}=-I_{B2}=6mA$		1.5		μs

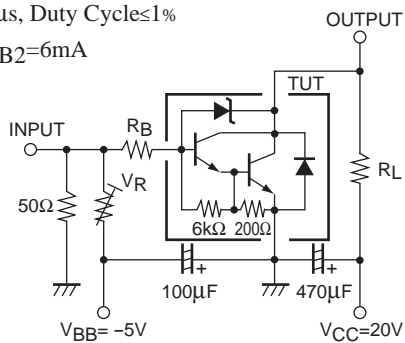
Package Dimensions

unit : mm (typ)
7508-002



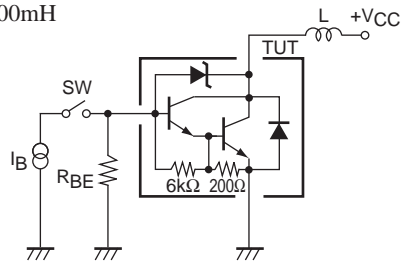
Specified Test Circuit

PW=50 μs , Duty Cycle $\leq 1\%$
 $I_{B1} = -I_{B2} = 6mA$

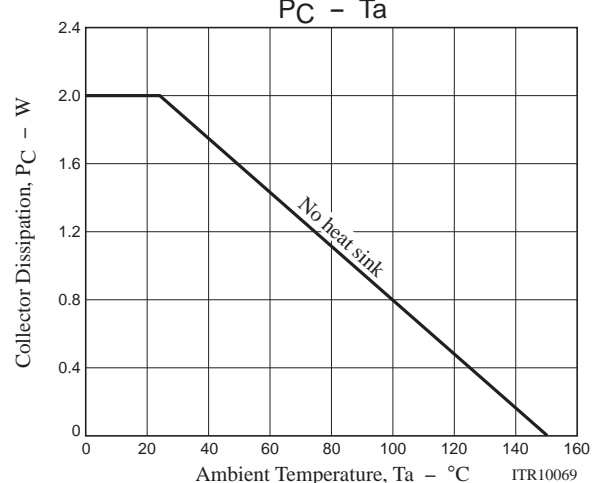
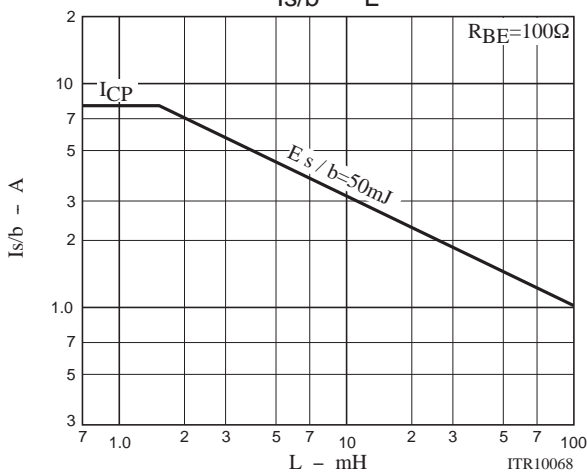
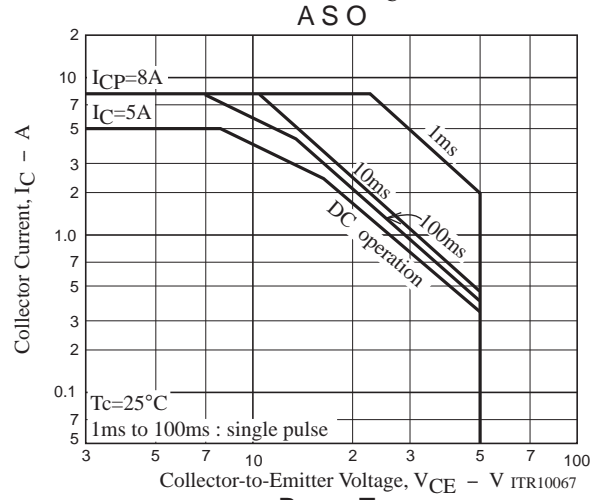
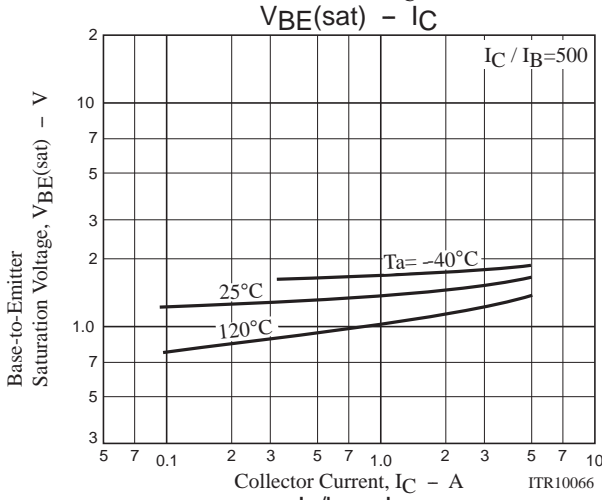
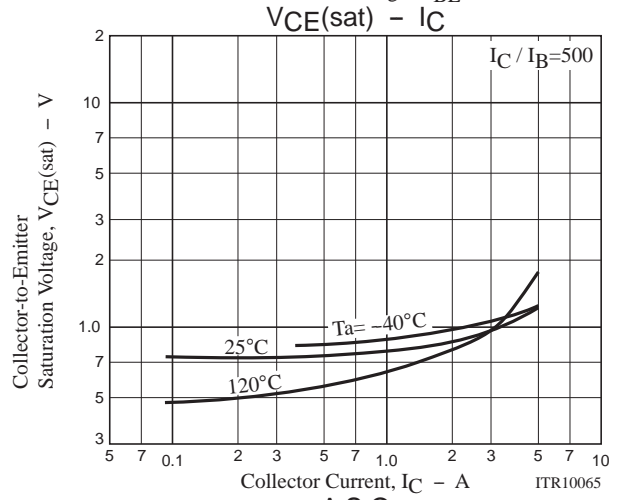
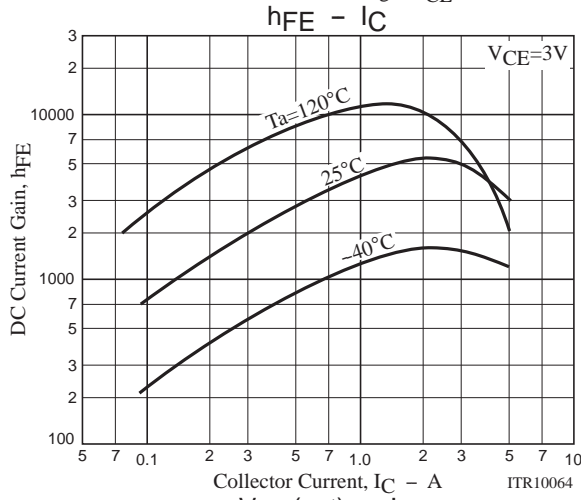
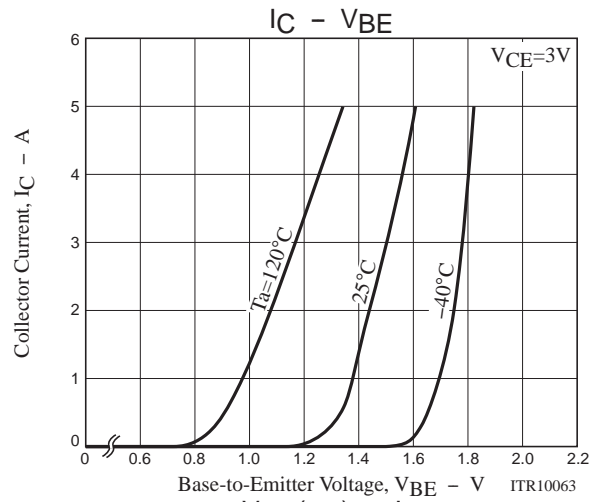
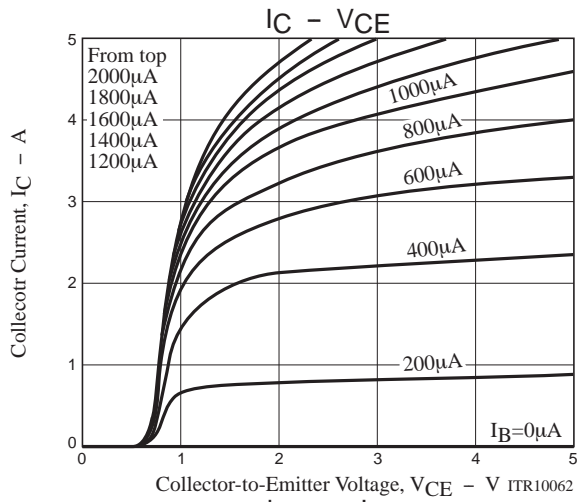


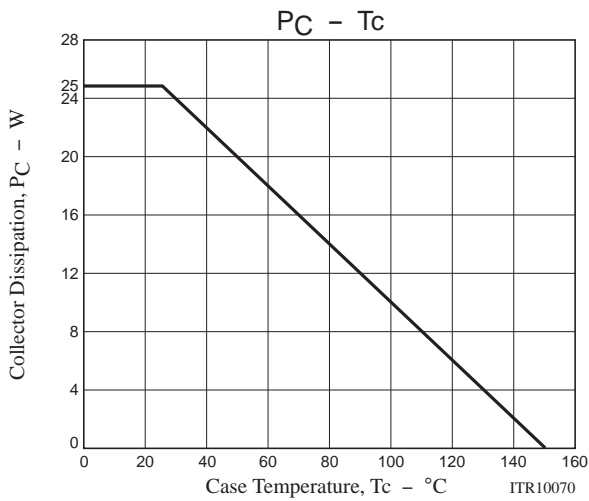
Es/b Test Circuit

$V_{CC}=20V, R_{BE}=100\Omega$
 $L=100mH$



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