



2SD1060

Bipolar Transistor 50V, 5A, Low $V_{CE(sat)}$ NPN TO-220-3L

ON Semiconductor®

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Applications

- Suitable for relay drivers, high-speed inverters, converters, and other general large-current switching

Features

- Low collector-to-emitter saturation voltage : $V_{CE(sat)}=0.3V$ max / $I_C=3A$, $I_B=0.3A$

Specifications

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

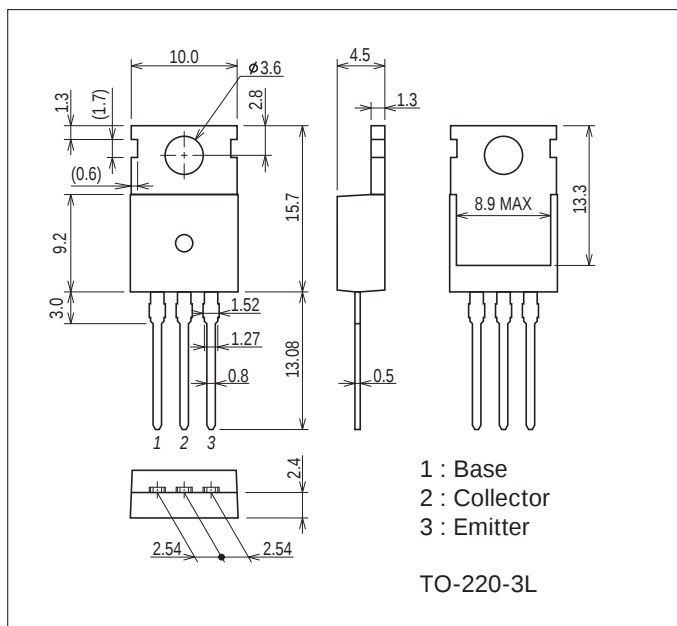
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		60	V
Collector-to-Emitter Voltage	V_{CEO}		50	V
Emitter-to-Base Voltage	V_{EBO}		6	V
Collector Current	I_C		5	A
Collector Current (Pulse)	I_{CP}		9	A
Collector Dissipation	P_C		1.75	W
		$T_c=25^\circ C$	30	W
Junction Temperature	T_j		150	$^\circ C$
Storage Temperature	T_{stg}		-55 to +150	$^\circ C$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

unit : mm (typ)

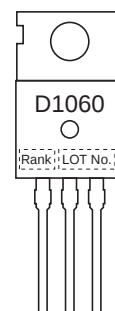
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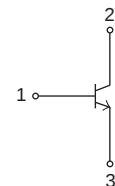
Product & Package Information

- Package : TO-220-3L
- JEITA, JEDEC : SC-46, TO-220AB
- Minimum Packing Quantity : 50 pcs./magazine

Marking



Electrical Connection



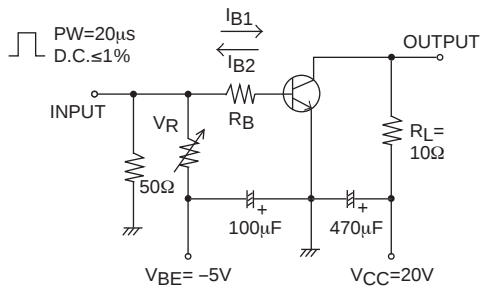
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=40V, I_E=0A$			0.1	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=4V, I_C=0A$			0.1	mA
DC Current Gain	h_{FE1}	$V_{CE}=2V, I_C=1A$	100*		280*	
	h_{FE2}	$V_{CE}=2V, I_C=2A$	80			
Gain-Bandwidth Product	f_T	$V_{CE}=5V, I_C=1A$		30		MHz
Output Capacitance	C_{ob}	$V_{CB}=10V, f=1MHz$		100		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=3A, I_B=0.3A$			0.3	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=1mA, I_E=0A$	60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=1mA, I_C=0A$	6			V
Turn-On Time	t_{on}	See specified Test Circuit		0.1		μs
Storage Time	t_{stg}			1.4		μs
Fall Time	t_f			0.2		μs

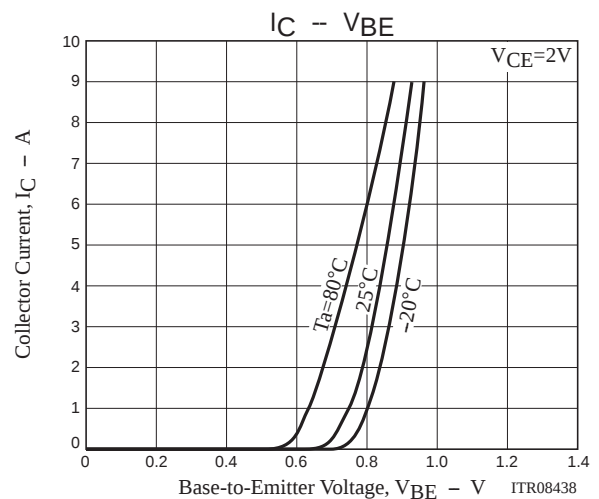
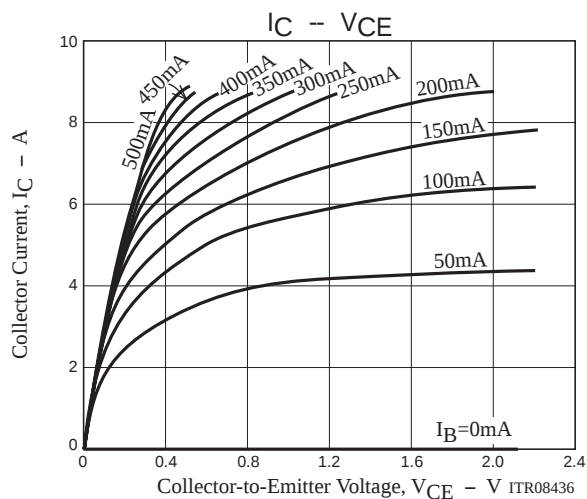
* : The 2SD1060 is classified by 1A h_{FE} as follows

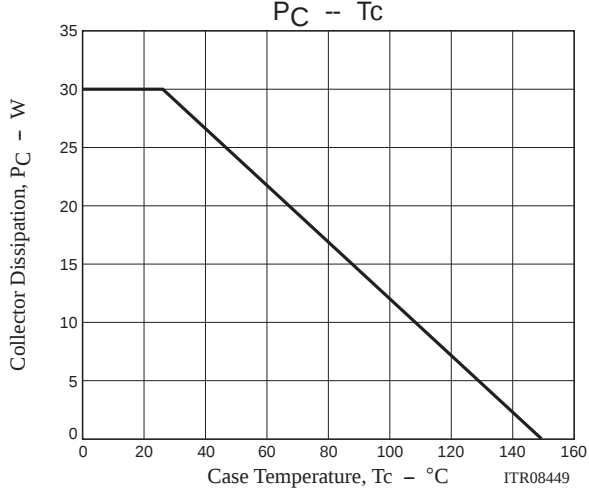
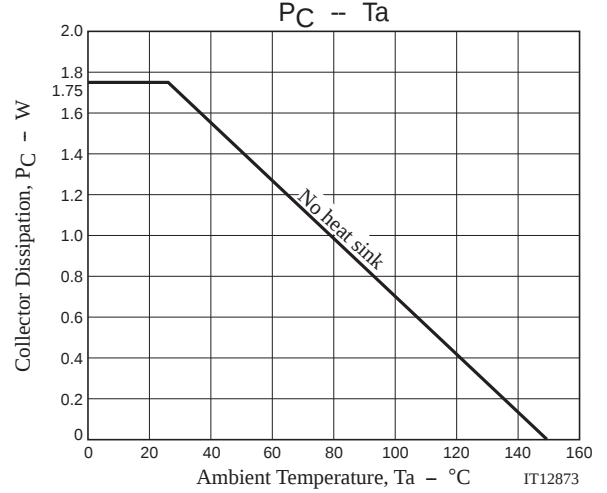
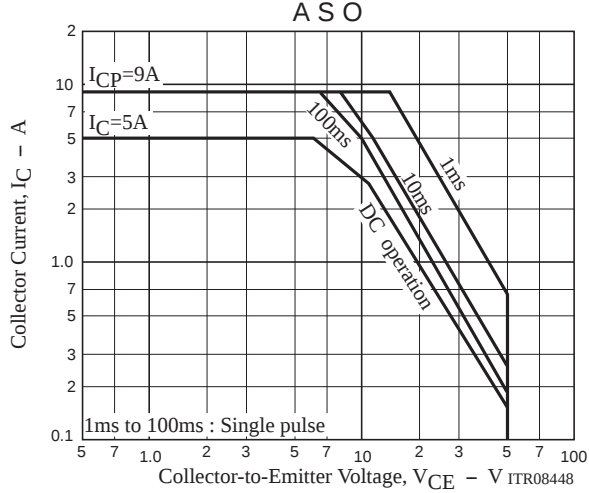
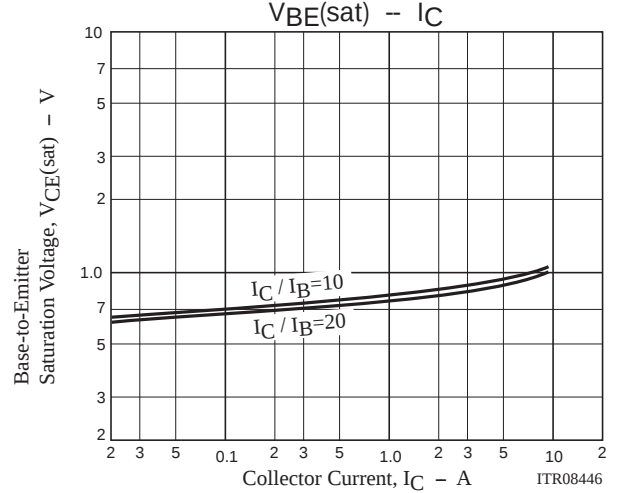
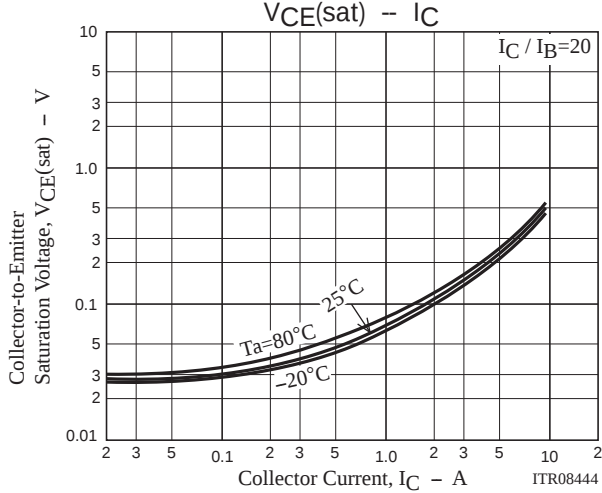
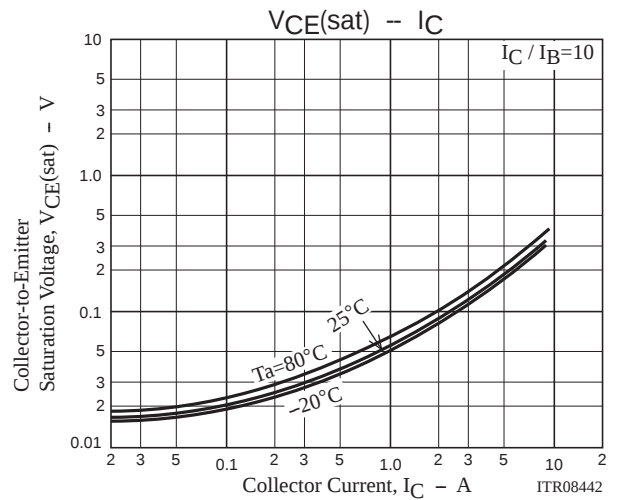
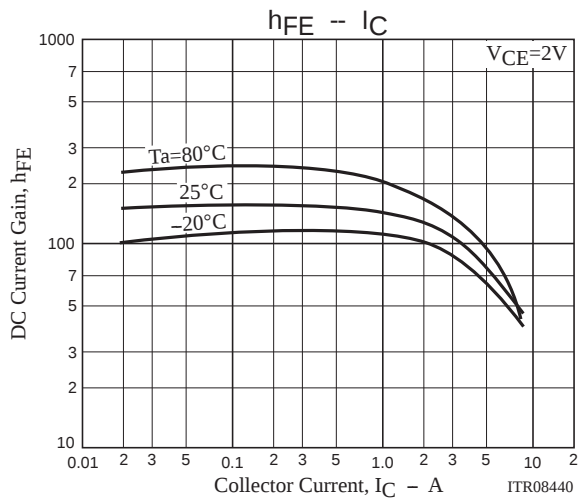
Rank	R	S
h_{FE}	100 to 200	140 to 280

Switching Time Test Circuit



$$I_C = 10I_{B1} = -10I_{B2} = 2A$$





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