



# 2SD1803

## NPN SILICON TRANSISTOR

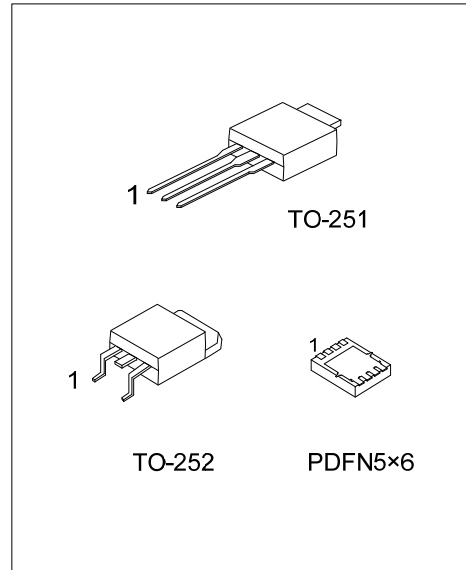
### HIGH CURRENT SWITCHING APPLICATION

■ DESCRIPTION

The UTC **2SD1803** applies to relay drivers, high-speed inverters, converters, and other general high-current switching applications.

■ FEATURES

- \*Low Collector-To-Emitter Saturation Voltage.
- \*High Current And High  $f_T$ .
- \*Excellent Linearity Of  $h_{FE}$ .
- \*Fast Switching Time.



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
2SD1803L-x-TM3-T	2SD1803G-x-TM3-T	TO-251	B	C	E	-	-	-	-	-	Tube
2SD1803L-x-TN3-R	2SD1803G-x-TN3-R	TO-252	B	C	E	-	-	-	-	-	Tape Reel
2SD1803L-x-P5060-R	2SD1803G-x-P5060-R	PDFN5x6	E	E	E	B	C	C	C	C	Tape Reel

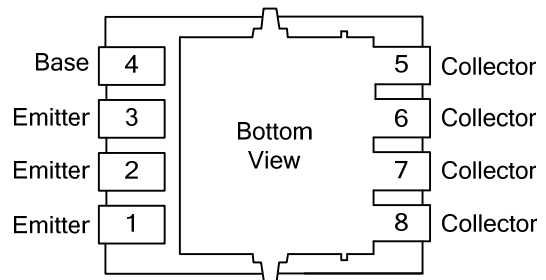
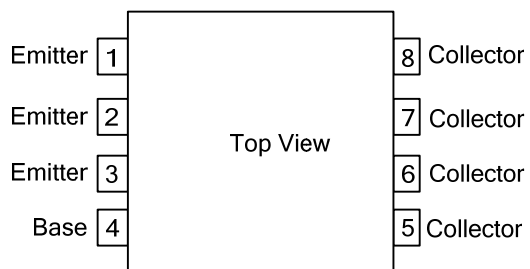
Note: Pin Assignment: C: Collector B: Base E: Emitter

<p>2SD1803G-x-TM3-T</p> <p>(1)Packing Type (2)Package Type (3)Rank (4)Green Package</p>	<p>(1) R: Tape Reel, T: Tube (2) TM3: TO-251, TN3: TO-252, P5060: PDFN5x6 (3) x: refer to Classification of <math>h_{FE1}</math> (4) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

TO-251 / TO-252	PDFN5x6
<p>UTC 2SD1803</p> <p>Lot Code ← [ ] [ ] [ ] [ ] [ ] → Date Code</p> <p>L: Lead Free G: Halogen Free</p>	<p>UTC 2SD1803</p> <p>Lot Code ← [ ] [ ] [ ] [ ] [ ] → Date Code</p>

■ PIN CONFIGURATION FOR PDFN5×6



■ ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage		$V_{CBO}$	60	V
Collector-Emitter Voltage		$V_{CEO}$	50	V
Emitter-Base Voltage		$V_{EBO}$	6	V
Base Current	DC	$I_B$	1	A
	Pulse	$I_{BP}$	2	A
Collector Current	DC	$I_C$	5	A
	Pulse	$I_{CM}$	8	A
Power Dissipation	$T_A=25^\circ\text{C}$	$P_D$	1	W
	$T_C=25^\circ\text{C}$		20	W
Junction Temperature		$T_J$	+150	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-40 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

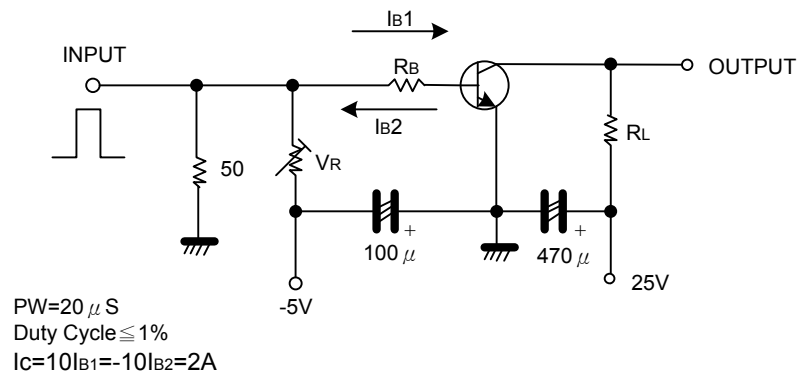
■ ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ , unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C=10\mu\text{A}$ , $I_E=0$	60			V
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=1\text{mA}$ , $R_{BE}=\infty$	50			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E=10\mu\text{A}$ , $I_C=0$	6			V
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=40\text{V}$ , $I_E=0$			1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=4\text{V}$ , $I_C=0$			1	$\mu\text{A}$
DC Current Gain	$h_{FE1}$	$V_{CE}=2\text{V}$ , $I_C=0.5\text{A}$	70		400	
	$h_{FE2}$	$V_{CE}=2\text{V}$ , $I_C=4\text{A}$	35			
C-E Saturation Voltage	$V_{CE(SAT)}$	$I_C=3\text{A}$ , $I_B=0.15\text{A}$		220	400	mV
B-E Saturation Voltage	$V_{BE(SAT)}$	$I_C=3\text{A}$ , $I_B=0.15\text{A}$		0.95	1.3	V
Gain-Bandwidth Product	$f_T$	$V_{CE}=5\text{V}$ , $I_C=1\text{A}$		180		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}$ , $f=1\text{MHz}$		40		pF
Turn-on Time	$t_{ON}$	See Test Circuit		50		ns
Storage Time	$t_S$	See Test Circuit		500		ns
Fall Time	$t_F$	See Test Circuit		20		ns

■ CLASSIFICATION OF  $h_{FE1}$

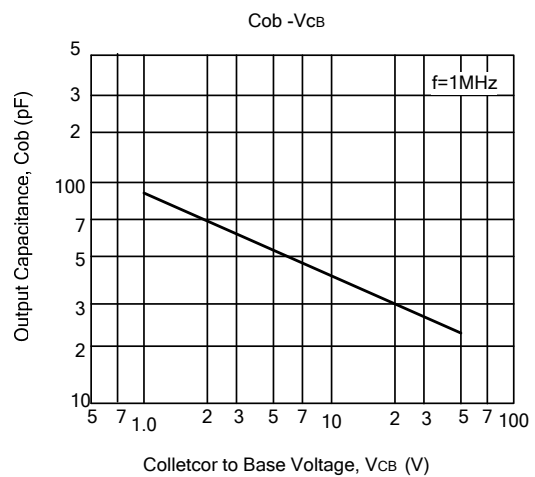
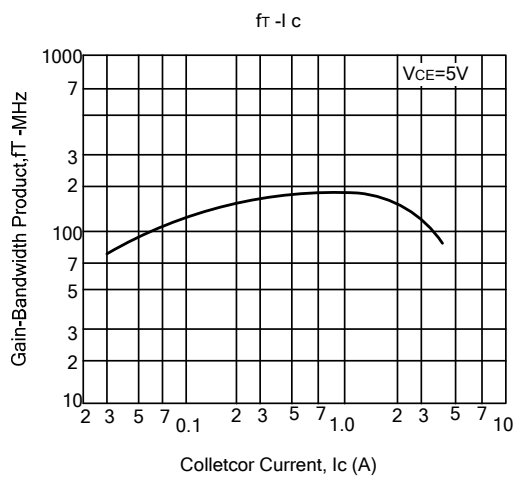
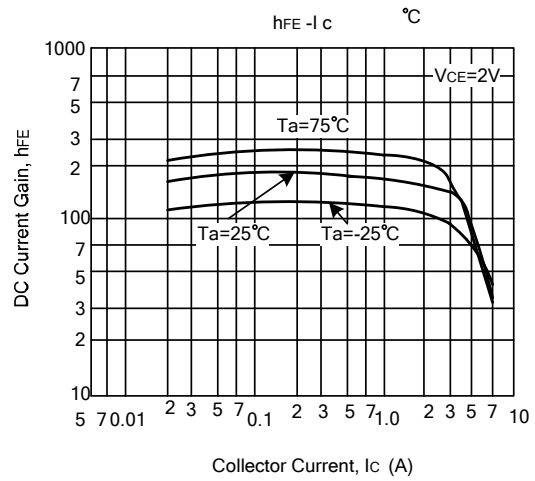
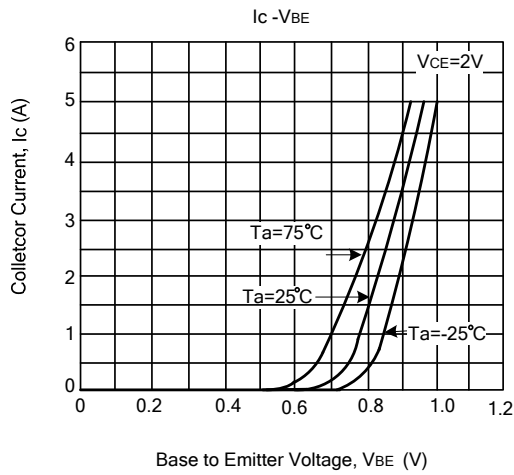
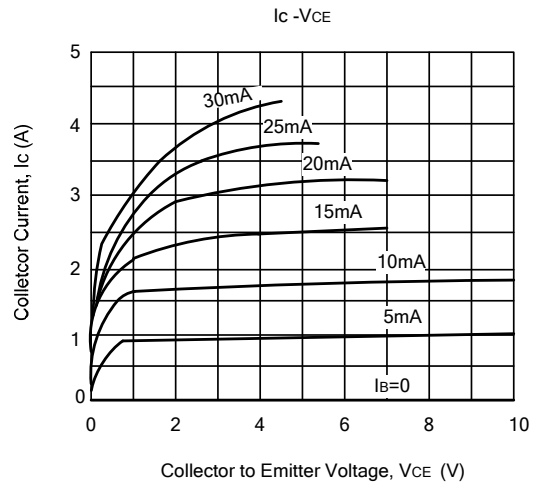
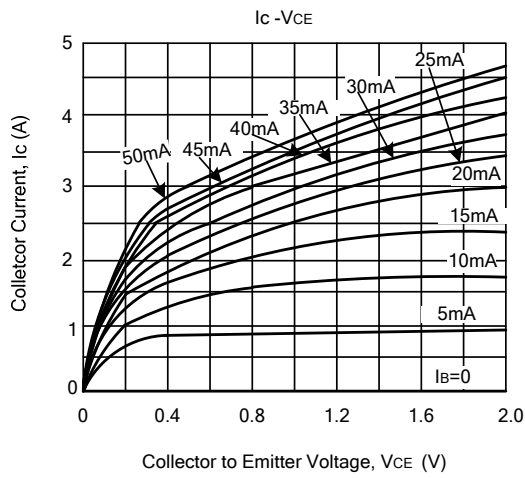
RANK	Q	R	S	T
RANGE	70 ~ 140	100 ~ 200	140 ~ 280	200 ~ 400

### ■ TEST CIRCUIT

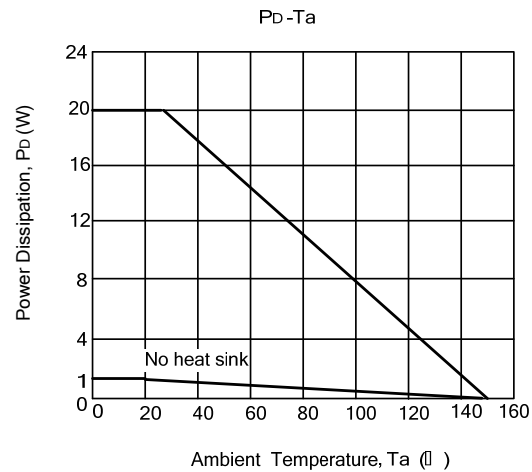
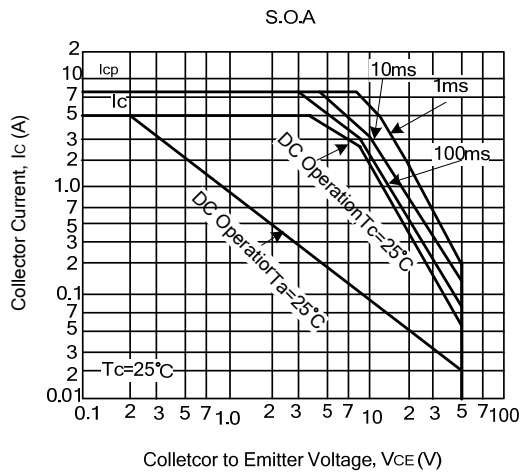
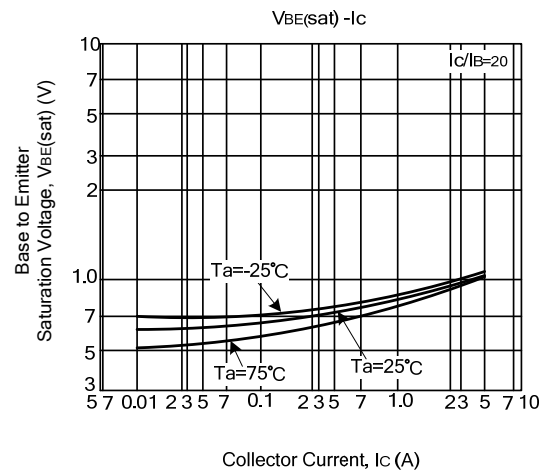
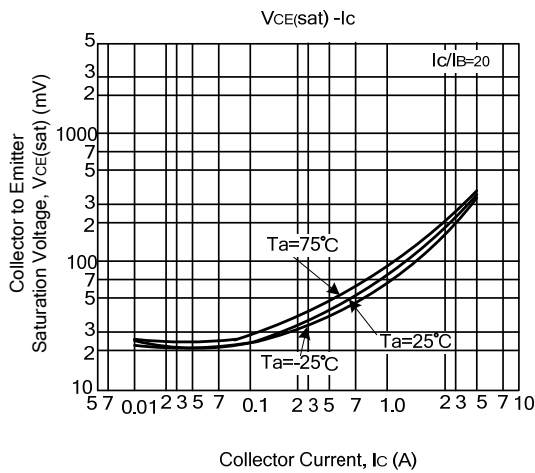


(Unit : (resistance :  $\Omega$ , capacitance : F))

## ■ TYPICAL CHARACTERISTICS



## ■ TYPICAL CHARACTERISTICS (Cont.)



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