



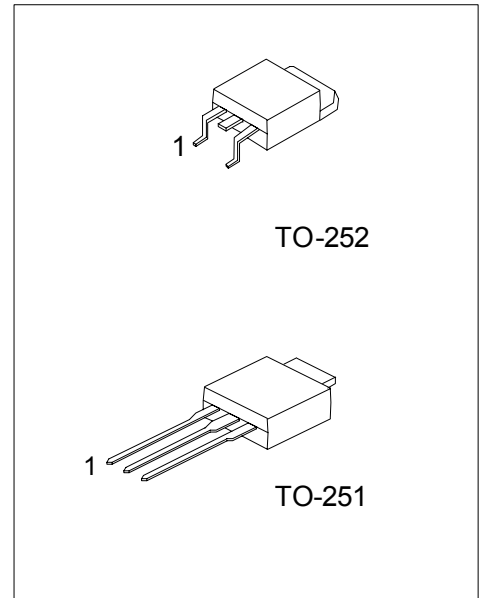
2SD1816

NPN EPITAXIAL PLANAR TRANSISTOR

HIGH CURRENT SWITCHING APPLICATIONS

■ FEATURES

- * Low collector-to-emitter saturation voltage
- * Good linearity of h_{FE}
- * Small and slim package facilitating compactness of sets.
- * High f_T
- * Fast switching speed



*Pb-free plating product number: 2SD1816L

■ ORDERING INFORMATION

Order Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
2SD1816-x-TM3-F-T	2SD1816L-x-TM3-F-T	TO-251	B	C	E	Tube
2SD1816-x-TN3-F-K	2SD1816L-x-TN3-F-K	TO-252	B	C	E	Bulk
2SD1816-x-TN3-F-R	2SD1816L-x-TN3-F-R	TO-252	B	C	E	Tape Reel

Note: x: Rank, refer to Classification of h_{FE1} .

2SD1816L-x-TM3-F-T	(1)Packing Type (2)Pin Assignment (3)Package Type (4)Rank (5)Lead Plating	(1) K: Bulk, T: Tube, R: Tape Reel (2) refer to Pin Assignment (3) TM3: TO-251, TN3: TO-252 (4) x: refer to Classification of h_{FE1} (5) L: Lead Free Plating, Blank: Pb/Sn
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■ ABSOLUTE MAXIMUM RATINGS (Ta =25°C)

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage		V _{CBO}	120	V
Collector-Emitter Voltage		V _{CEO}	100	V
Emitter-Base Voltage		V _{EBO}	6	V
Collector Current	DC	I _C	4	A
	PULSE(Note 1)		8	A
Collector Power Dissipation		P _D	1	W
			(T _C =25°C) 20 (Note 2)	W
Junction Temperature		T _J	+150	°C
Storage Temperature		T _{STG}	-40 ~ +150	°C

Note1: Duty=1/2, Pw=20ms

Note2: When mounted on a 40×40×0.7mm ceramic board

Note3: 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.

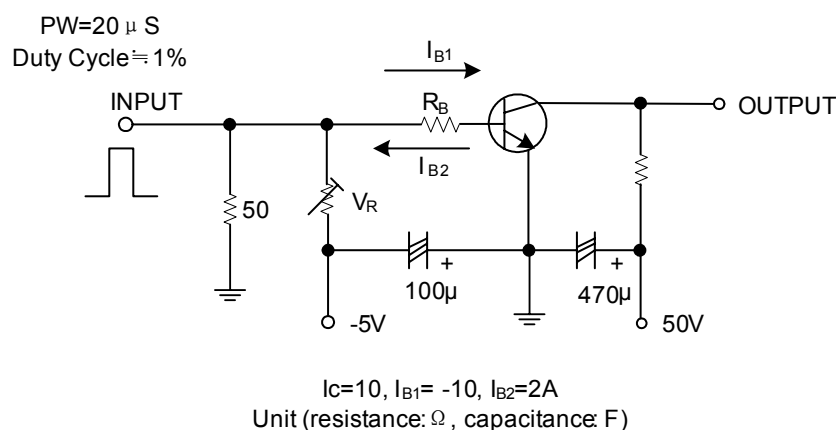
■ ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Base Breakdown Voltage	BV_{CBO}	$I_C = 10\mu A, I_E = 0$	120			V
Collector Emitter Breakdown Voltage	BV_{CEO}	$I_C = 1mA, R_B = \infty$	100			V
Emitter Base Breakdown Voltage	BV_{EBO}	$I_E = 10\mu A, I_C = 0$	6			V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = 2A, I_B = 0.2A$		0.9	1.2	V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C = 2A, I_B = 0.2A$		150	400	mV
Collector Cut-Off Current	I_{CBO}	$V_{CB} = 100V, I_E = 0$			1	μA
Emitter Cut-Off Current	I_{EBO}	$V_{EB} = 4V, I_C = 0$			1	μA
DC Current Transfer Ratio	h_{FE1}	$V_{CE} = 5V, I_C = 0.5A$	70		400	
	h_{FE2}	$V_{CE} = 5V, I_C = 3A$	40			
Transition Frequency	f_T	$V_{CE} = 10V, I_C = 0.5A$		180		MHz
Output Capacitance	C_{ob}	$V_{CB} = 10V, I_E = 0A, f = 1MHz$		40		pF
Turn-on Time	t_{ON}	See test circuit		100		ns
Storage Time	t_{STG}	See test circuit		900		ns
Fall Time	t_F	See test circuit		50		ns

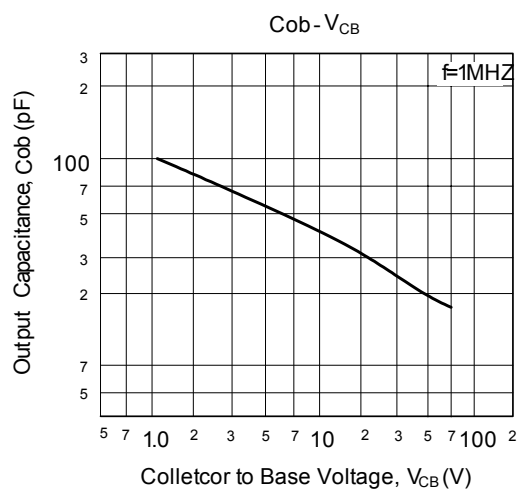
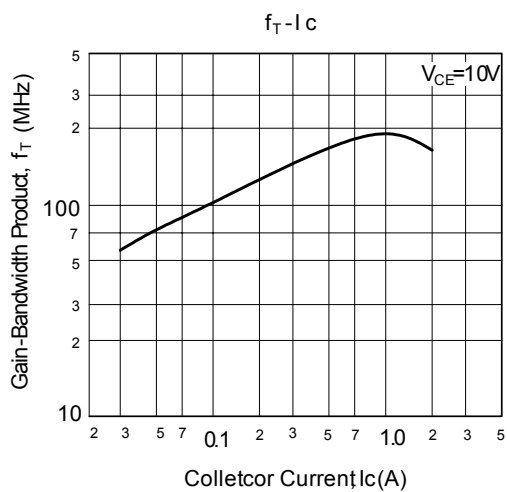
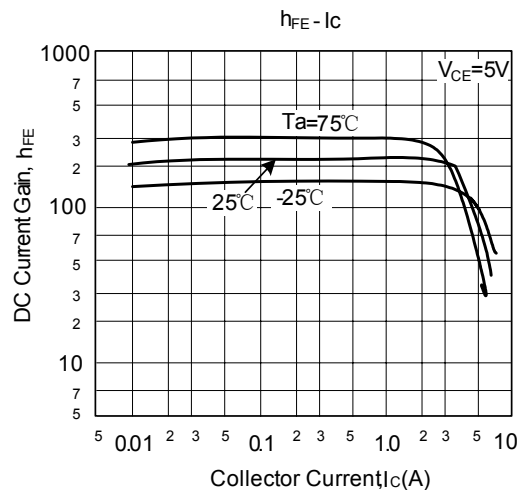
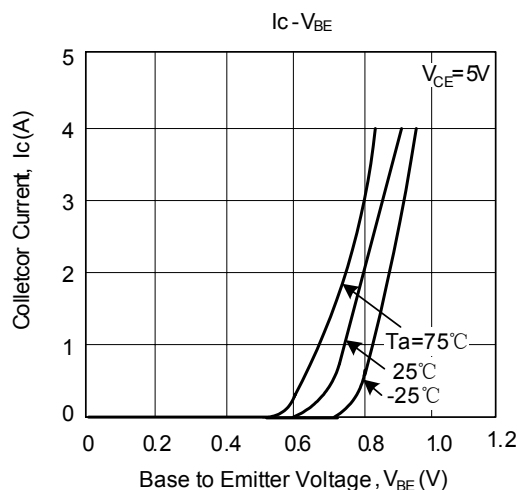
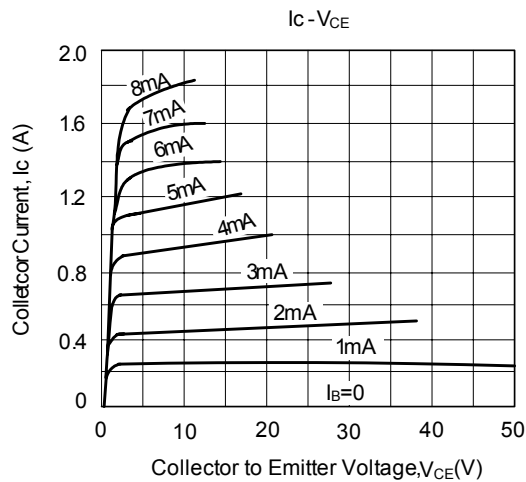
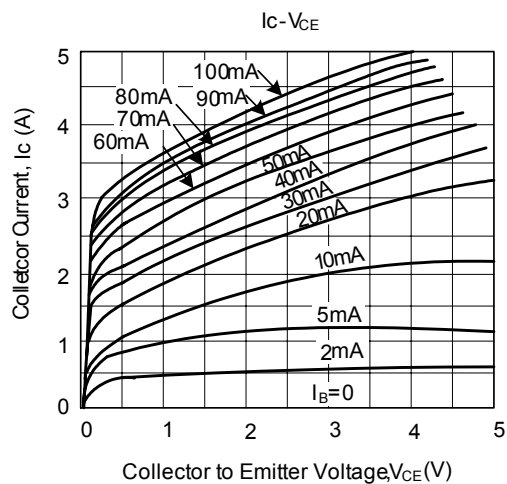
■ CLASSIFICATION of h_{FE1}

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

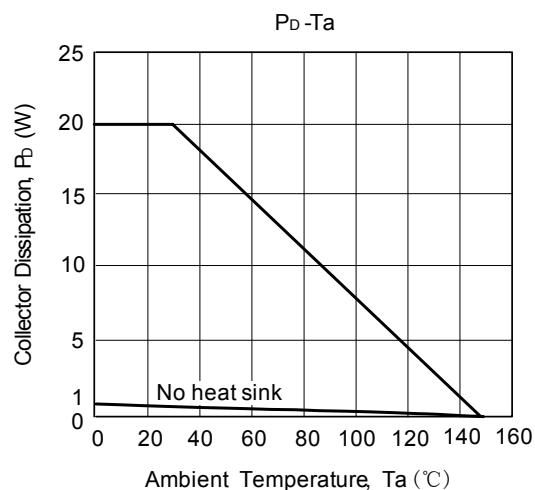
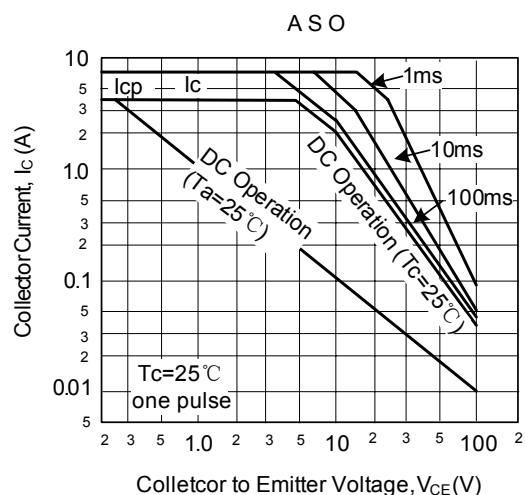
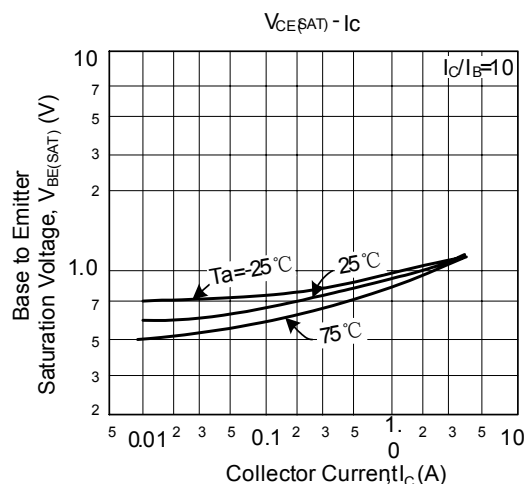
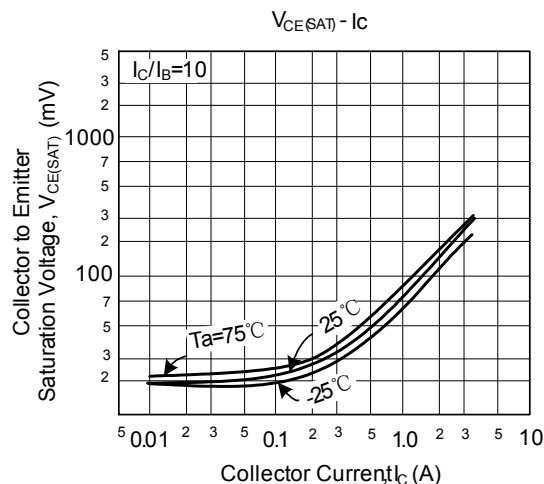
■ TEST CIRCUIT



■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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