



2SB1683 / 2SD2639

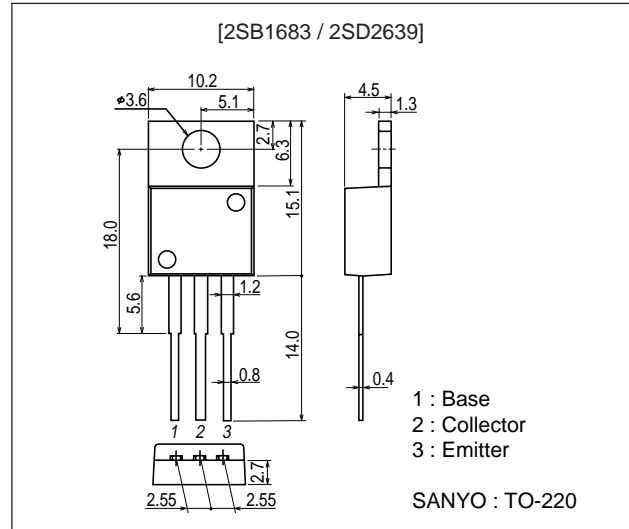
140V / 12A, AF 60W Output Applications

Features

- Wide ASO because of on-chip ballast resistance.
- Good dependence of f_T on current and good HF characteristic.

Package Dimensions

unit : mm
 2010C



Specifications

() : 2SB1683

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		(-)160	V
Collector-to-Emitter Voltage	V_{CEO}		(-)140	V
Emitter-to-Base Voltage	V_{EBO}		(-)6	V
Collector Current	I_C		(-)12	A
Collector Current (Pulse)	I_{CP}		(-)15	A
Collector Dissipation	P_C	$T_c=25^\circ\text{C}$	80	W
Junction Temperature	T_j		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-40 to +150	$^\circ\text{C}$

Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=-80\text{V}, I_E=0$			(-)0.1	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=-4\text{V}, I_C=0$			(-)0.1	mA

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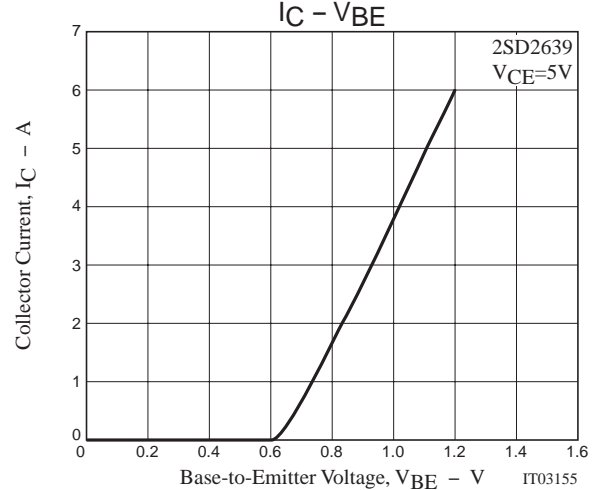
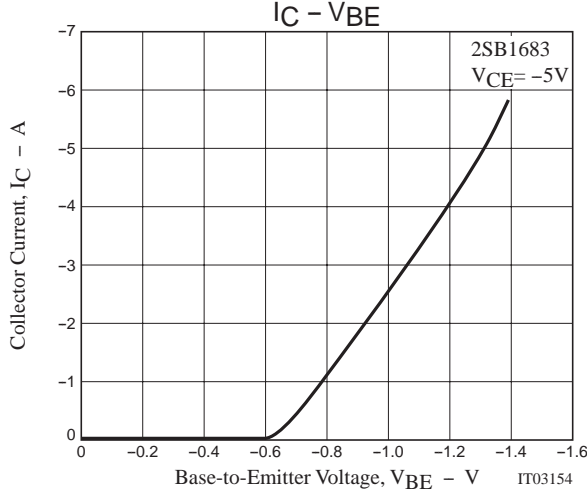
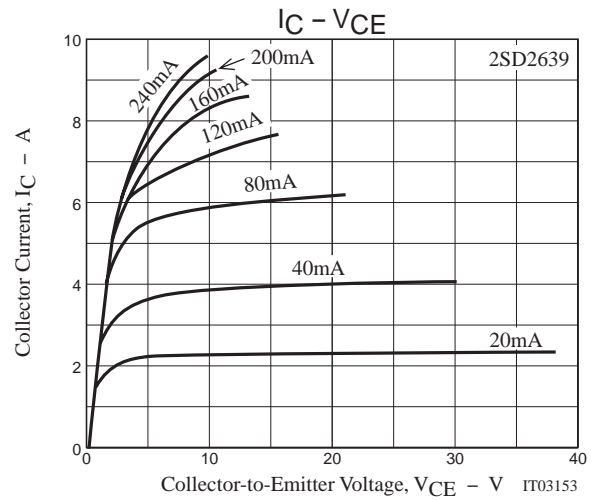
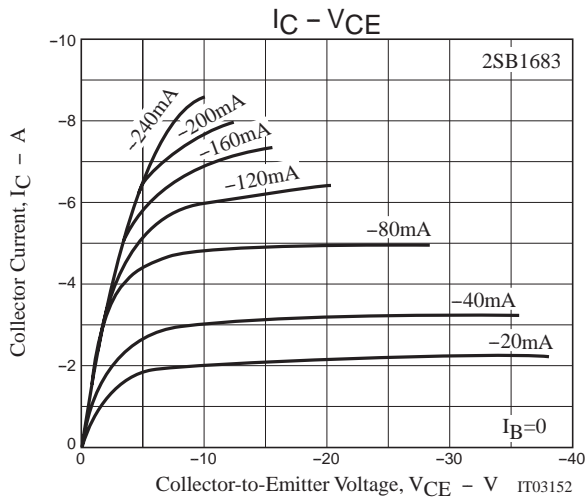
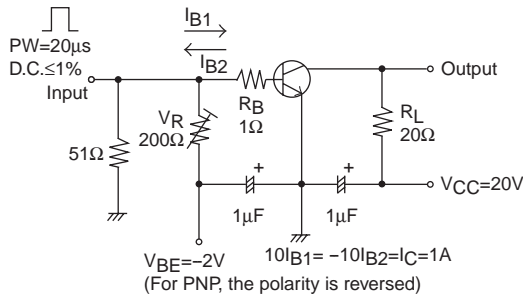
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
DC Current Gain	h_{FE1}	$V_{CE} = (-)5V, I_C = (-)1A$	60*		200*	
	h_{FE2}	$V_{CE} = (-)5V, I_C = (-)6A$	20			
Gain-Bandwidth Product	f_T	$V_{CE} = (-)5V, I_C = (-)1A$		15		MHz
Output Capacitance	C_{ob}	$V_{CB} = (-)10V, f = 1MHz$		(300)210		pF
Base-to-Emitter Saturation Voltage	V_{BE}	$V_{CE} = (-)5V, I_C = (-)1A$			1.5	V
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)5A, I_B = (-)0.5A$		(1.1)0.6	2.5	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)5mA, I_E = 0$	(-)160			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)5mA, R_{BE} = \infty$	(-)140			V
		$I_C = (-)50mA, R_{BE} = \infty$	(-)140			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = (-)5mA, I_C = 0$	(-)6			V
Turn-ON Time	t_{on}	See specified test circuit.		(0.25)0.26		μs
Fall Time	t_f	See specified test circuit.		(0.53)0.68		μs
Storage Time	t_{stg}	See specified test circuit.		(1.61)6.88		μs

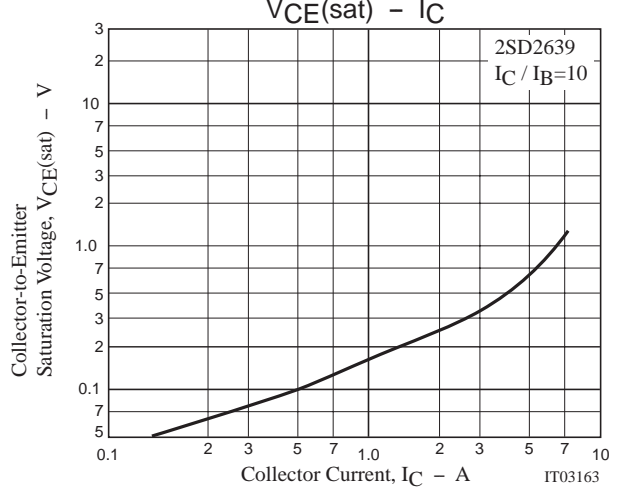
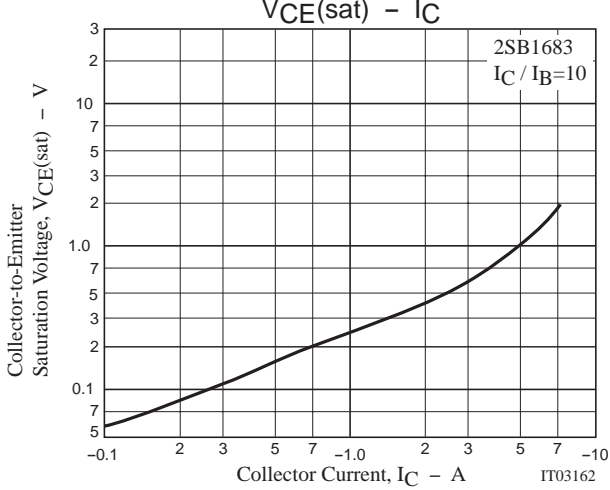
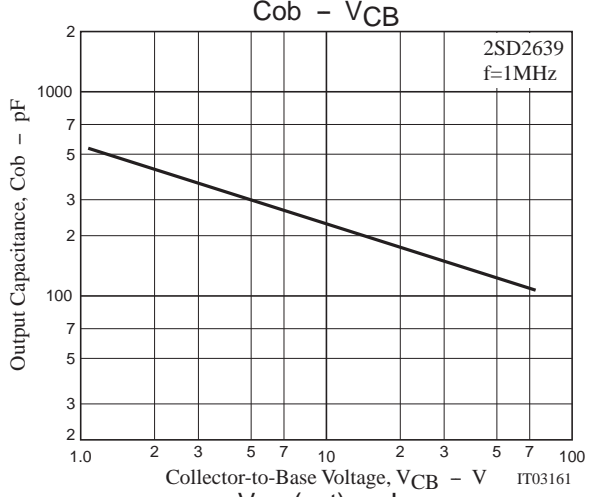
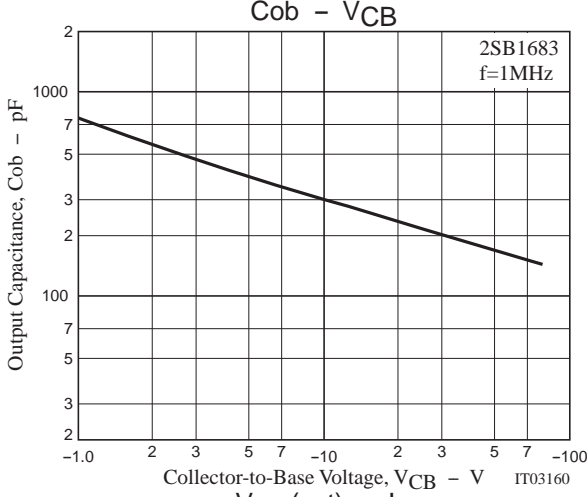
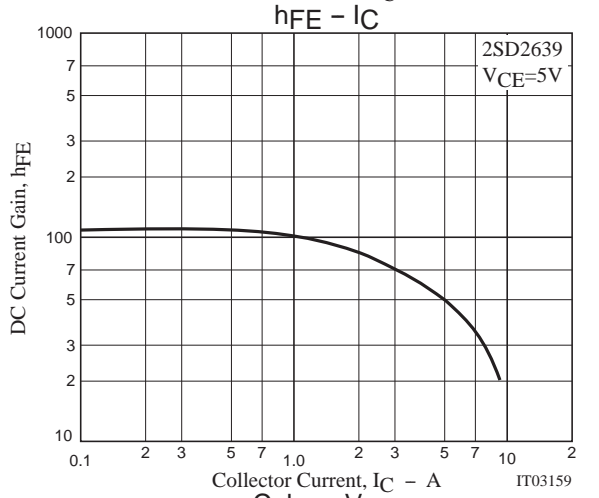
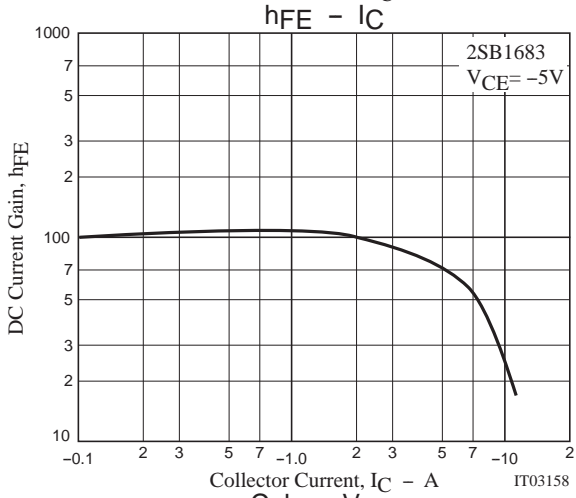
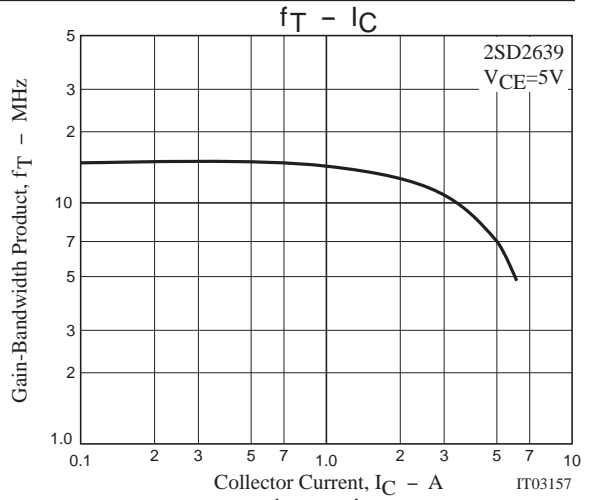
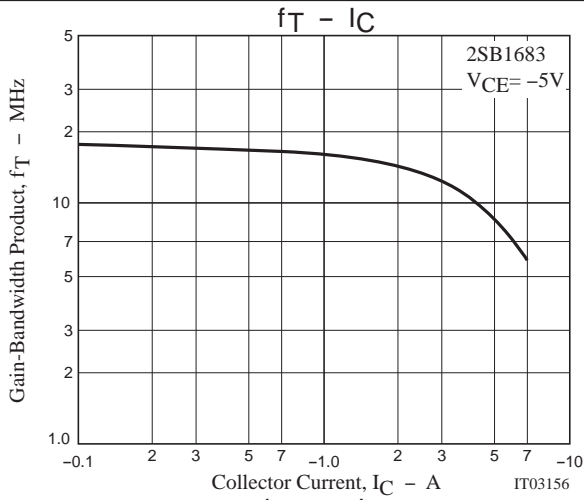
* : The 2SB1683 / 2SD2639 are classified by 1A h_{FE} as follows :

Rank	D	E
h_{FE}	60 to 120	100 to 200

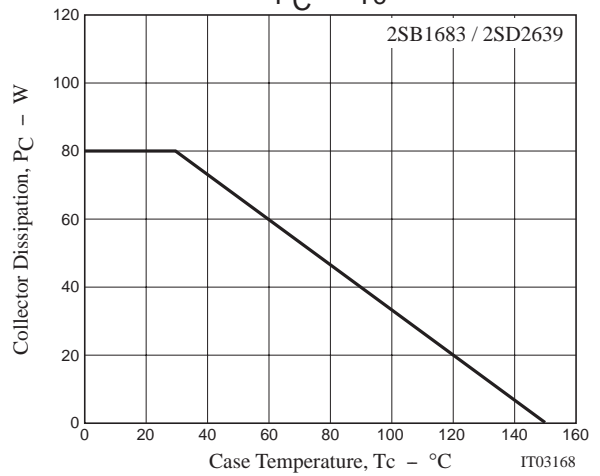
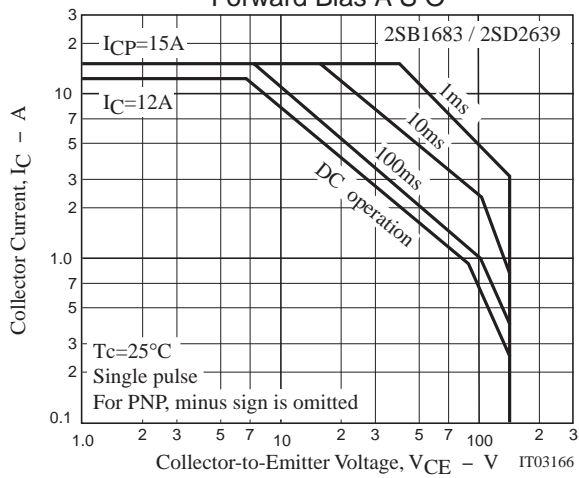
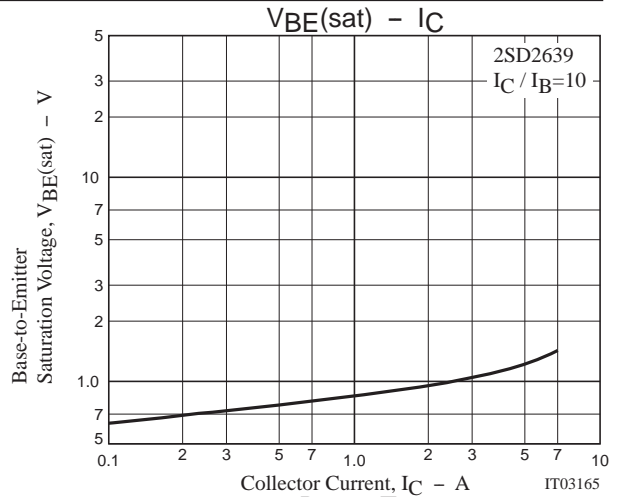
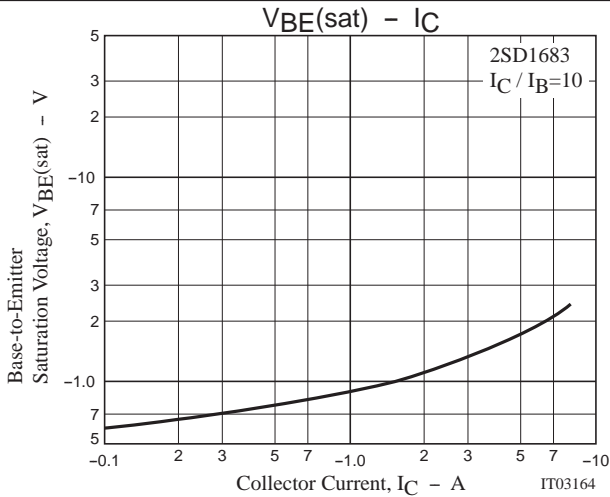
Switching Time Test Circuit



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