



## PRODUCT DATA SHEET



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**Datasheet**



**Resources**



**Samples**

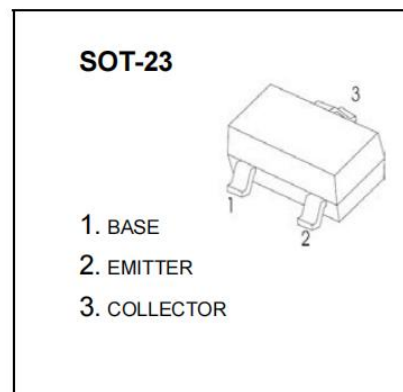
Please note: Please check the JINGAO Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at [www.jg-semi.cn](http://www.jg-semi.cn). Please email any questions regarding the system integration to [JINGAO\\_questions@jgsemi.com](mailto:JINGAO_questions@jgsemi.com).

## FEATURE

- Extremely low saturation voltage
- Complementary NPN type: FMMT618

## APPLICATION

- Gate Driving MOSFETs and IGBTs
- DC-DC converters
- Charging circuit
- Power switches



## MAXIMUM RATINGS ( $T_a=25^{\circ}\text{C}$ unless otherwise noted)

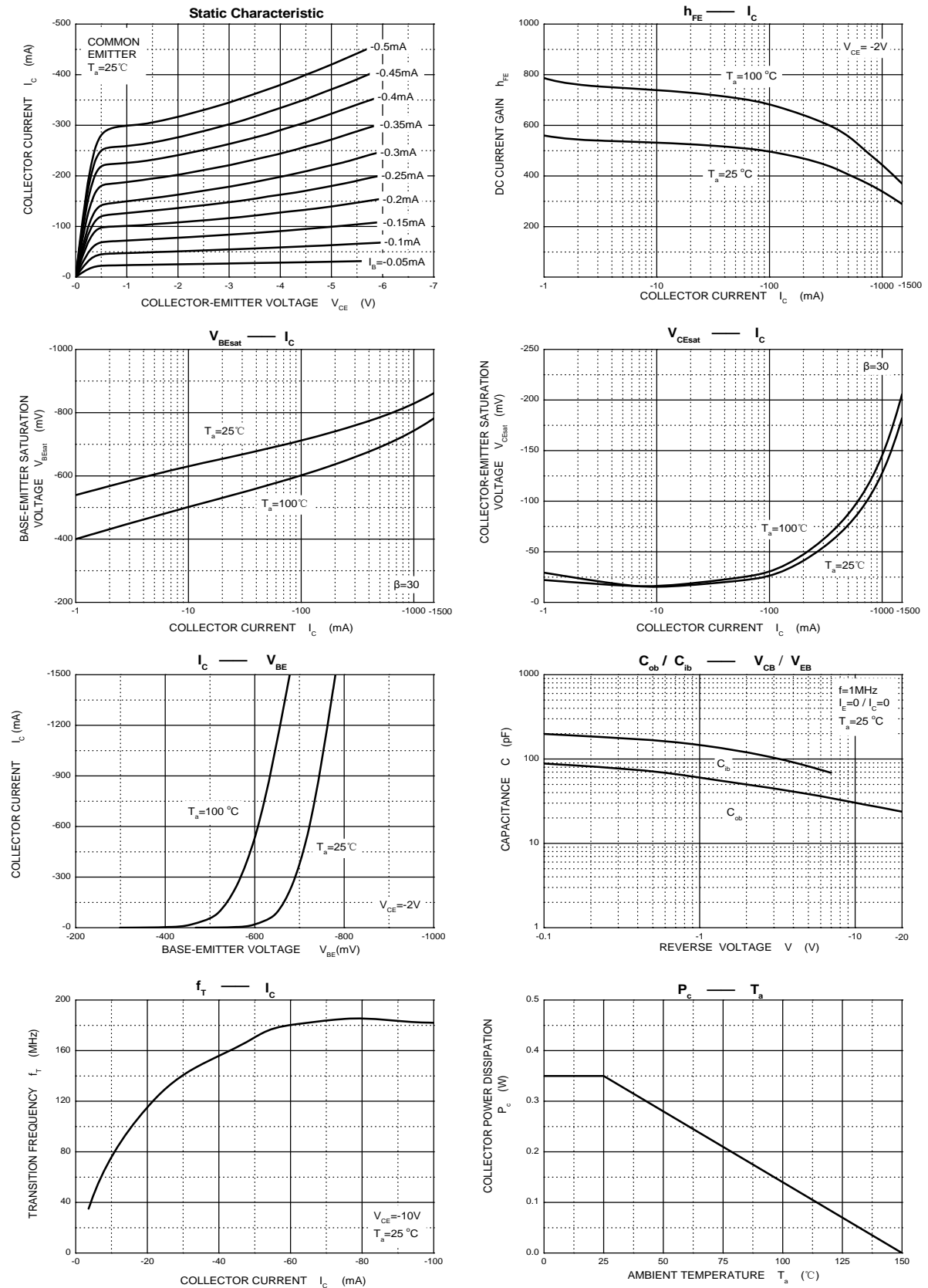
Symbol	Parameter	Value	Unit
$V_{CB0}$	Collector-Base Voltage	-20	V
$V_{CE0}$	Collector-Emitter Voltage	-20	V
$V_{EB0}$	Emitter-Base Voltage	-7	V
$I_B$	Base Current	-0.5	A
$I_C$	Collector Current -Continuous	-1.5	A
$P_C$	Total Collector Dissipation	350	mW
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	357	$^{\circ}\text{C/W}$
$T_J, T_{stg}$	Operation Junction and Storage Temperature Range	-55~+150	$^{\circ}\text{C}$

**ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =-100μA, I <sub>E</sub> =0	-20			V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> = -10mA, I <sub>B</sub> =0	-20			V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> = -100μA, I <sub>C</sub> =0	-7			V
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> =-15V, I <sub>E</sub> =0			-0.1	μA
Collector cut-off current	I <sub>CES</sub>	V <sub>CE</sub> =-15V, V <sub>BE</sub> =0			-0.1	μA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> = -4V, I <sub>C</sub> =0			-0.1	μA
DC current gain	h <sub>FE(1)</sub> *	V <sub>CE</sub> = -2V, I <sub>C</sub> =-10mA	300			
	h <sub>FE(2)</sub> *	V <sub>CE</sub> =-2V, I <sub>C</sub> =-100mA	300	600		
	h <sub>FE(3)</sub> *	V <sub>CE</sub> =-2V, I <sub>C</sub> =-2A	150			
	h <sub>FE(4)</sub> *	V <sub>CE</sub> =-2V, I <sub>C</sub> =-4A	35			
Collector-emitter saturation voltage	V <sub>CE(sat)</sub> (1) *	I <sub>C</sub> =-0.1A, I <sub>B</sub> =-10mA			-40	mV
	V <sub>CE(sat)</sub> (2) *	I <sub>C</sub> =-1A, I <sub>B</sub> =-20mA			-200	mV
	V <sub>CE(sat)</sub> (3) *	I <sub>C</sub> =-1.5A, I <sub>B</sub> =-50mA			-220	mV
Base-emitter saturation voltage	V <sub>BE(sat)</sub> *	I <sub>C</sub> =-1.5A, I <sub>B</sub> = -50mA			-1	V
Base-emitter voltage	V <sub>BE(on)</sub> *	V <sub>CE</sub> =-2V, I <sub>C</sub> =-2A			-1	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =-10V, I <sub>C</sub> =-50mA, f=100MHz	150			MHz
Collector output capacitance	C <sub>ob</sub>	V <sub>CB</sub> =-10V, f=1MHz			30	pF
Turn-on Time	t <sub>(on)</sub>	V <sub>CC</sub> =-10V, I <sub>C</sub> =-1A, I <sub>B1</sub> =I <sub>B2</sub> =-20mA		40		ns
Turn-off Time	t <sub>(off)</sub>			670		ns

\*Measured under pulse conditions . Pulse width =300μs. Duty cycle≤2%.

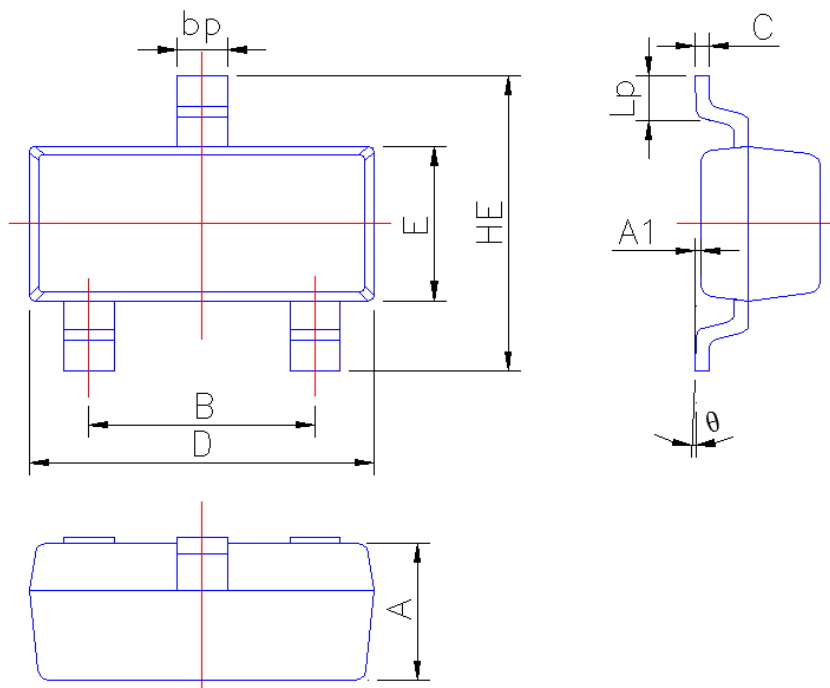
## Typical Characteristics



## PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



Symbol	Dimension in Millimeters	
	Min	Max
A	0.90	1.10
A1	0.013	0.100
B	1.80	2.00
bp	0.35	0.50
C	0.09	0.150
D	2.80	3.00
E	1.20	1.40
HE	2.20	2.80
Lp	0.20	0.50
θ	0°	5°

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