优尚

YOUSHANG SEMICONDUCTOR

设计研发新型功率器件

各类小信号开关

中低压及高压大电流等场效应管

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Features

NPN Transistor

- BV_{CEO} > 60V
- I_C = 1A Continuous Collector Current
- Low Saturation Voltage (500mV max @ 1A)
- h_{FE} characterised up to 2A
- R_{SAT} = 210mΩ @1A for a Low Equivalent On-Resistance

PNP Transistor

- BV_{CEO} > -60V
- I_C = -1A Continuous Collector Current
- Low Saturation Voltage (-600mV max @ -1A)
- hFE characterised up to 2A

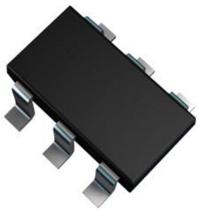
Mechanical Data

- Case: SOT26
- Case Material: Molded Plastic, “Green” Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020 Terminals: Finish – Matte Tin Plated Leads;
- Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.015 grams (Approximate)

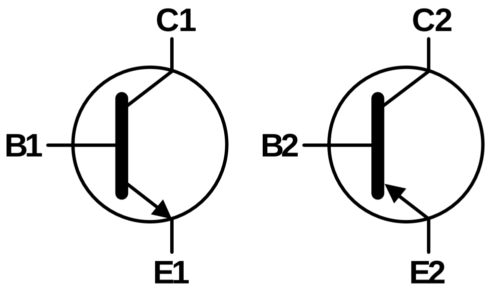
Applications

- MOSFET Gate Driver
- Low Power Motor Drive
- Low Power DC-DC Converters

SOT26



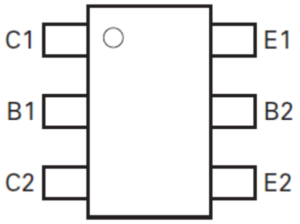
Top View



NPN Transistor

PNP Transistor

Device Symbol



Top View
Pin-Out

NPN - Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	7	V
Peak Pulse Current	I_{CM}	2	A
Continuous Collector Current	I_C	1	A
Base Current	I_B	500	mA

PNP - Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-80	V
Collector-Emitter Voltage	V_{CEO}	-60	V
Emitter-Base Voltage	V_{EBO}	-7	V
Peak Pulse Current	I_{CM}	-2	A
Continuous Collector Current	I_C	-1	A
Base Current	I_B	-500	mA

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Note 6)	P_D	1.1 8.8	W mW/°C
	(Note 7)		1.7 13.6	
Thermal Resistance, Junction to Ambient	(Note 6)	$R_{\theta JA}$	113	°C/W
	(Note 7)		73	
Thermal Resistance, Junction To Lead	(Note 8)	$R_{\theta JL}$	74	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 9)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

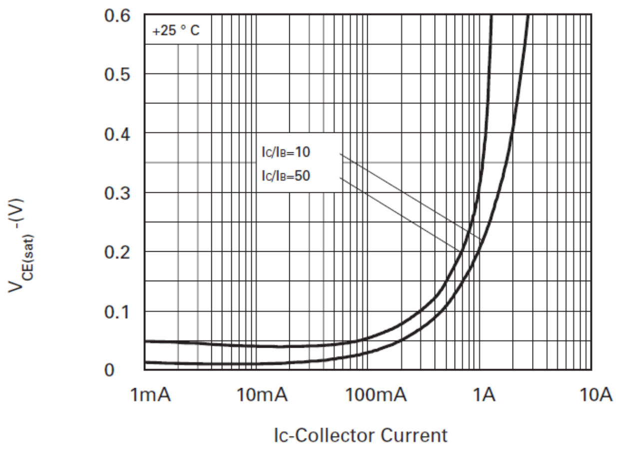
Notes:
6. For a device mounted with the collector lead on 25mm x 25mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; the device is measured under still air conditions whilst operating in a steady-state. Two active dice running at equal power with heatsink split 50% to each collector.
7. Same as Note 6, except the device is measured at t < 5 seconds.
8. Thermal resistance from junction to solder-point (at the end of the collector lead).
9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

NPN - Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

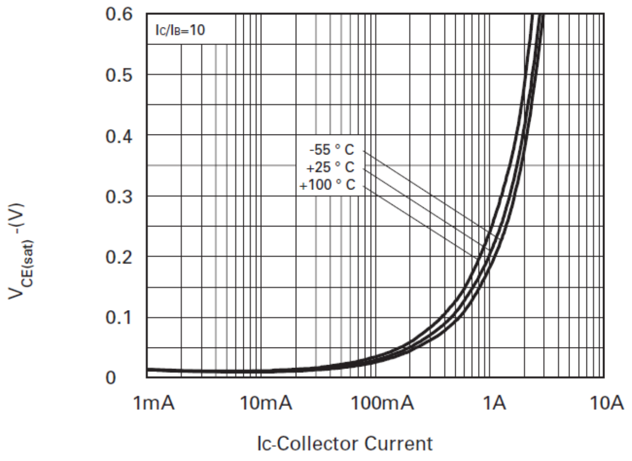
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	80	—	—	V	I_C = 100µA, I_E = 0
Collector-Emitter Breakdown Voltage (Note 10)	BV_{CEO}	60	—	—	V	I_C = 10mA, I_B = 0
Emitter-Base Breakdown Voltage	BV_{EBO}	7	—	—	V	I_E = 100µA, I_C = 0
Collector Cut-Off Current	I_{CBO}	—	—	100	nA	V_{CB} = 60V
Emitter Cut-Off Current	I_{EBO}	—	—	100	nA	V_{EB} =5.6
Emitter Cut-Off Current	I_{CES}	—	—	100	nA	V_{CE} = 60V
ON CHARACTERISTICS (Note 10)						
DC Current Gain	h_{FE}	100 100 80 30	— — — —	— 300 — —	—	I_C = 1mA, V_{CE} = 5V I_C = 500mA, V_{CE} = 5V I_C = 1A, V_{CE} = 5V I_C = 2A, V_{CE} = 5V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	0.25 0.5	V V	I_C = 500mA, I_B = 50mA I_C = 1A, I_B = 100mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	1.1	V	I_C = 1A, I_B = 100mA
Base-Emitter Turn-On Voltage	$V_{BE(on)}$	—	—	1.0	V	I_C = 1, V_{CE} = 5V
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C_{obo}	—	—	10	pF	V_{CB} = 10V, f = 1.0MHz
Current Gain Bandwidth Product	f_T	180	—	—	MHz	I_C = 50mA, V_{CE} = 10V f = 100MHz

Note: 10. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

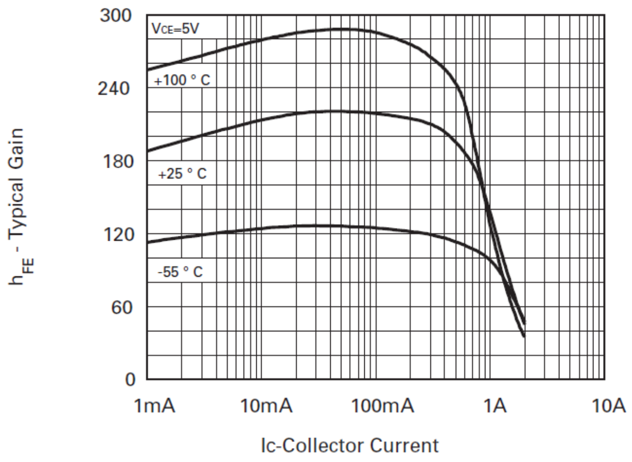
NPN - Typical Electrical Characteristics (@T$_A$ = +25°C, unless otherwise specified.)



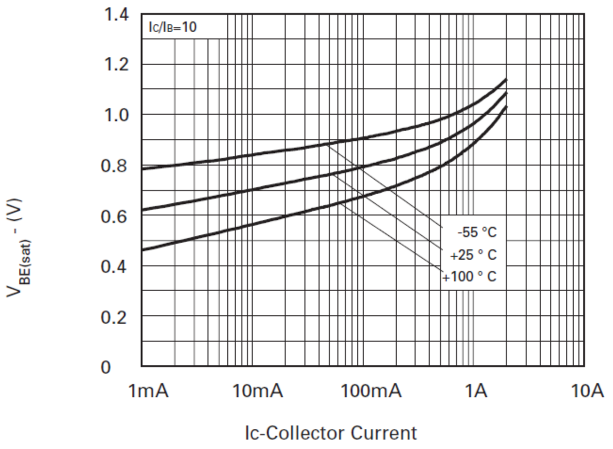
VCE(sat) v IC



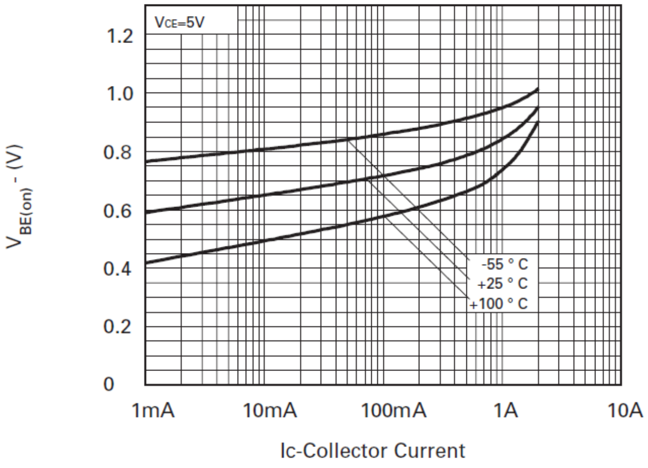
VCE(sat) v IC



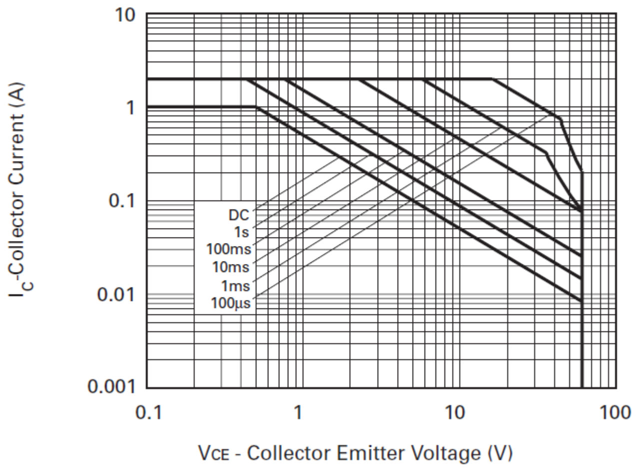
hFE V IC



VBE(sat) v IC



VBE(on) v IC



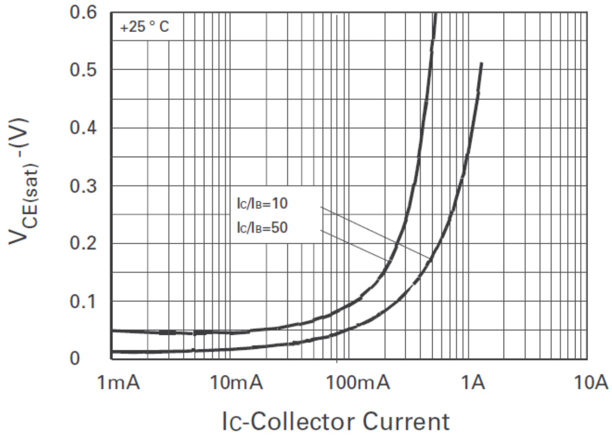
Safe Operating Area

PNP - Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

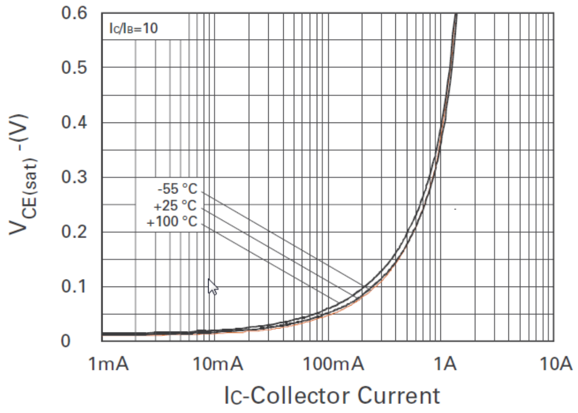
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	-80	—	—	V	I_C = -100µA, I_E = 0
Collector-Emitter Breakdown Voltage (Note 10)	BV_{CEO}	-60	—	—	V	I_C = -10mA, I_B = 0
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	—	—	V	I_E = -100µA, I_C = 0
Collector Cut-Off Current	I_{CBO}	—	—	-100	nA	V_{CB} = -60V
Emitter Cut-Off Current	I_{EBO}	—	—	-100	nA	V_{EB} = -5.6V
Emitter Cut-Off Current	I_{CES}	—	—	-100	nA	V_{CE} = -60V
ON CHARACTERISTICS (Note 10)						
DC Current Gain	h_{FE}	100 100 80 15	— — — —	— 300 — —	—	I_C = -1mA, V_{CE} = -5V I_C = -500mA, V_{CE} = -5V I_C = -1A, V_{CE} = -5V I_C = -2A, V_{CE} = -5V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	-0.3 -0.6	V V	I_C = -500mA, I_B = -50mA I_C = -1A, I_B = -100mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	-1.2	V	I_C = -1A, I_B = -100mA
Base-Emitter Turn-On Voltage	$V_{BE(on)}$	—	—	-1.0	V	I_C = -1A, V_{CE} = -5V
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C_{obo}	—	—	10	pF	V_{CB} = -10V, f = 1.0MHz
Current Gain Bandwidth Product	f_T	150	—	—	MHz	I_C = -50mA, V_{CE} = -10V f = 100MHz

Note: 10. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

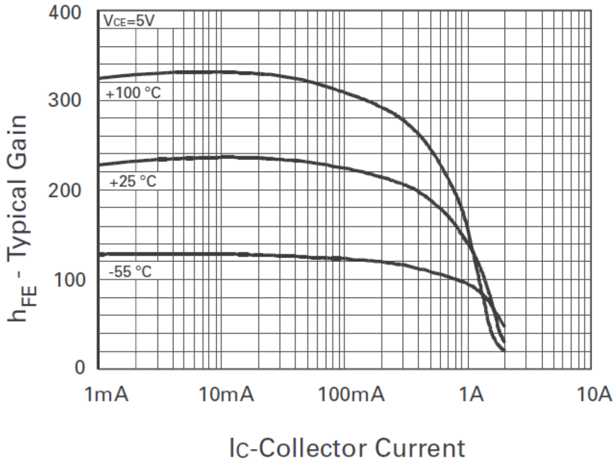
PNP - Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



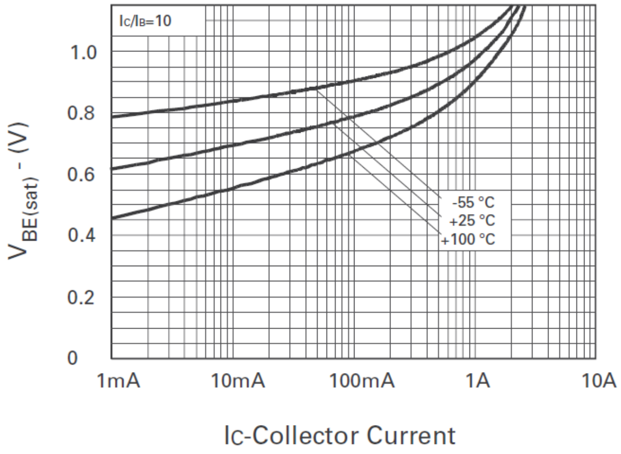
VCE(sat) v IC



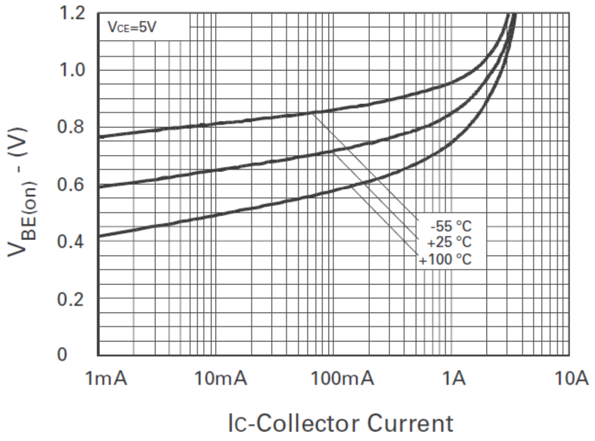
VCE(sat) v IC



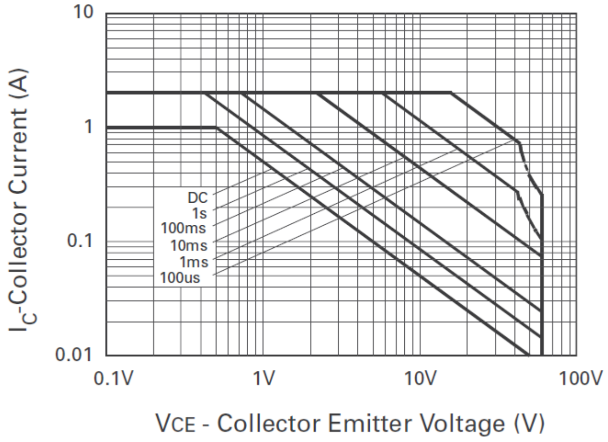
hFE V IC



VBE(sat) v IC

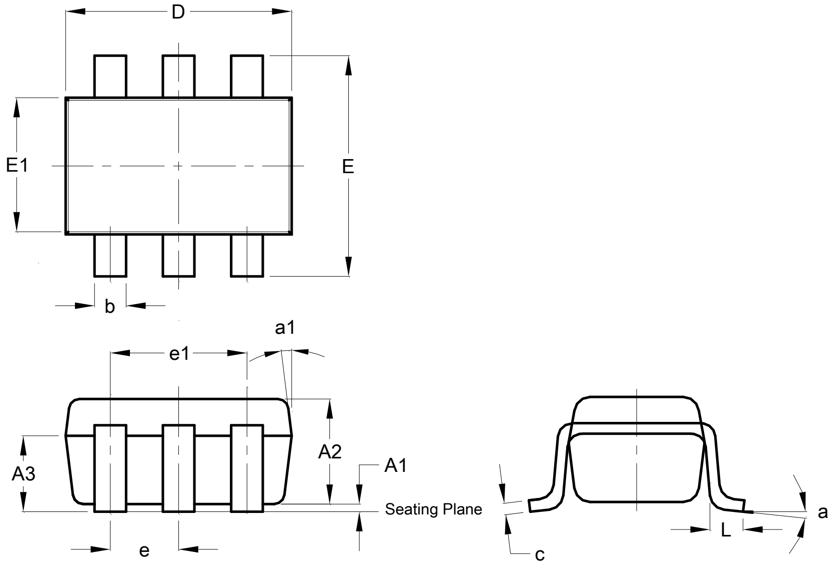


VBE(on) v IC



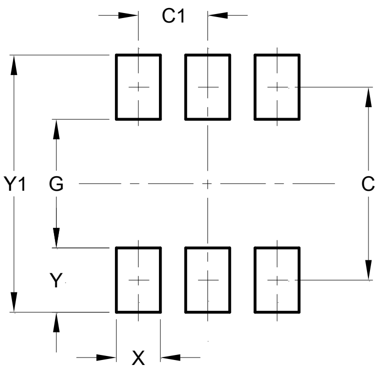
Safe Operating Area

Package Outline Dimensions



SOT26			
Dim	**Min**	**Max**	**Typ**
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
C	2.40
C1	0.95
G	1.60
X	0.55
Y	0.80
Y1	3.20