



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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企业微信二维码



企业QQ二维码

Features

- $BV_{CEO} > 50V$
- $I_C = 1.25A$ Continuous Collector Current
- 500mW Power Dissipation
- Low Saturation Voltage $V_{CE(sat)} < 330mV @ 1.25A$
- $R_{CE(SAT)} = 160m\Omega$ for a Low Equivalent on-Resistance
- Complementary PNP type: NK-FMRTL720

Mechanical Data

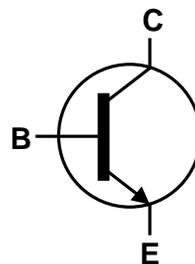
- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (3)
- Weight 0.008 grams (Approximate)

Applications

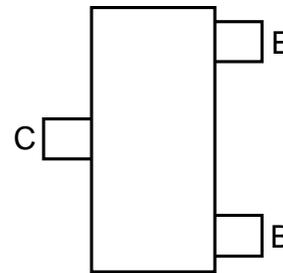
- MOSFET Gate Driving
- DC-DC / DC-AC Converters
- Regulator
- LED Driver
- Motor Control



Top View



Device Symbol



Top View
Pin-Out

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	100	V
Collector-Emitter Voltage	V _{CEO}	50	V
Emitter-Base Voltage	V _{EBO}	7	V
Continuous Collector Current	I _C	1.25	A
Peak Pulse Current	I _{CM}	2	A
Base Current	I _B	200	mA

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

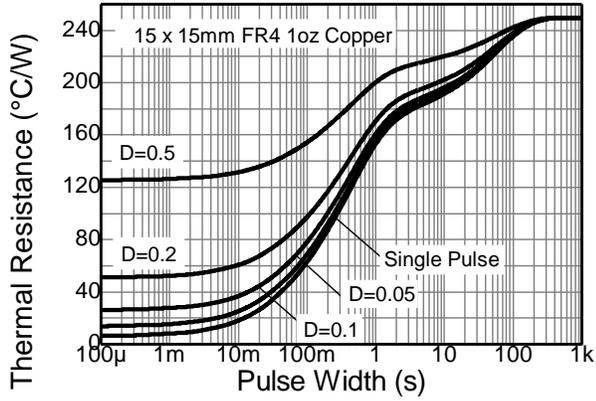
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	500	mW
Power Dissipation (Note 6)	P _D	675	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	250	°C/W
Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	185	°C/W
Thermal Resistance, Junction to Lead (Note 7)	R _{θJL}	197	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 8)

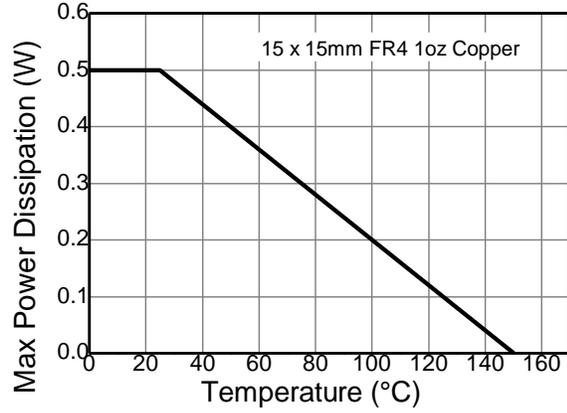
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
5. For a device mounted with the collector lead on 15mm x 15mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 6. Same as Note 5, except the device is measured at t ≤ 5 seconds.
 7. Thermal resistance from junction to solder-point (at the end of the collector lead).
 8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

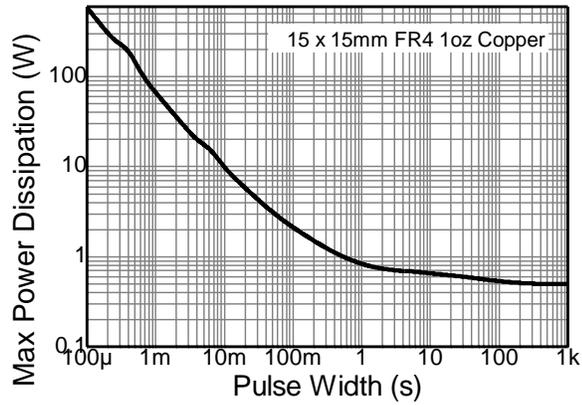
Thermal Characteristics and Derating information



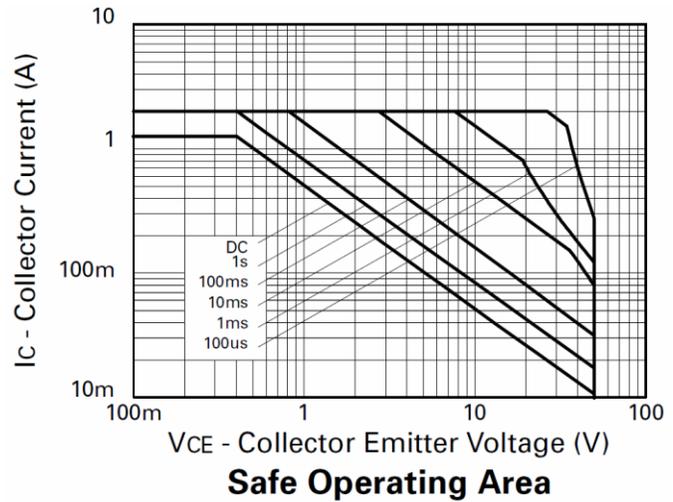
Transient Thermal Impedance



Derating Curve



Pulse Power Dissipation



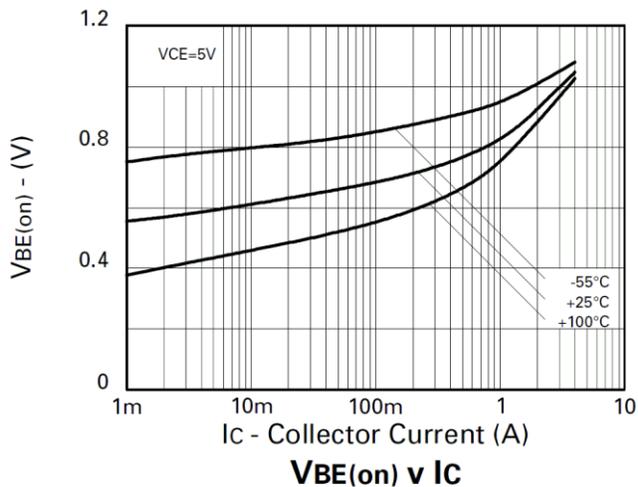
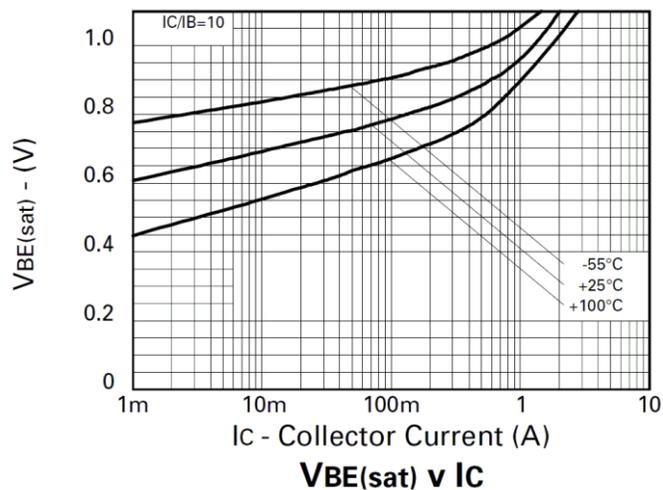
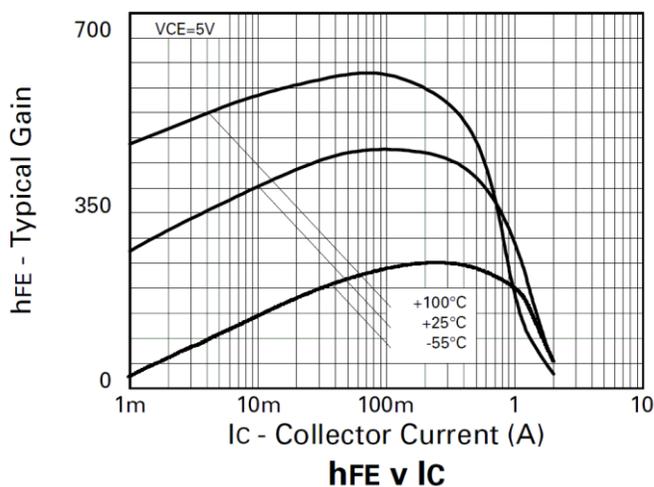
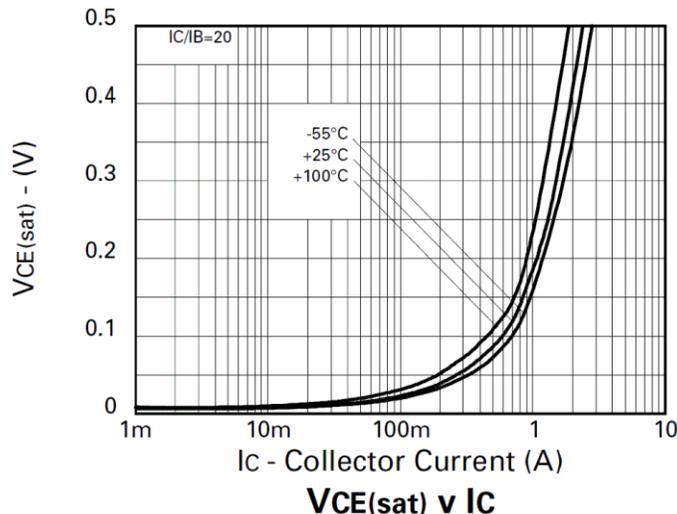
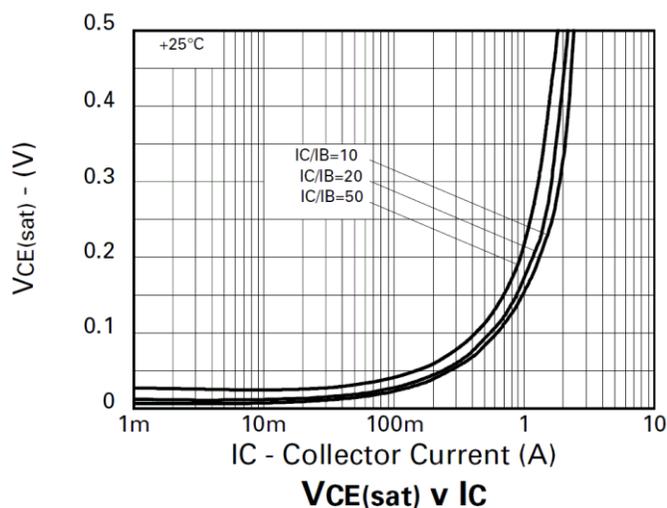
Safe Operating Area

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

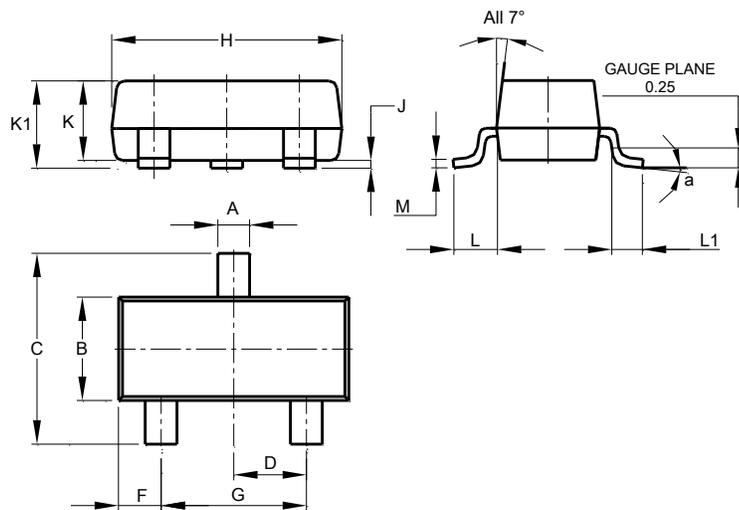
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	100	210	-	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	50	70	-	V	$I_C = 5\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	7	8.5	-	V	$I_E = 100\mu\text{A}$
Collector Cut-Off Current	I_{CBO}	-	-	10	nA	$V_{CB} = 80\text{V}$
Emitter Cut-Off Current	I_{EBO}	-	-	10	nA	$V_{EB} = 6\text{V}$
Collector Emitter Cut-Off Current	I_{CES}	-	-	10	nA	$V_{CES} = 50\text{V}$
ON CHARACTERISTICS (Note 9)						
Static Forward Current Transfer Ratio	h_{FE}	200	400	-	-	$I_C = 10\text{mA}, V_{CE} = 5\text{V}$
		300	450	-		
		200	400	-		
		100	230	-		
		30	50	-		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	-	24	45	mV	$I_C = 100\text{mA}, I_B = 10\text{mA}$
		-	60	100		$I_C = 250\text{mA}, I_B = 10\text{mA}$
		-	100	180		$I_C = 500\text{mA}, I_B = 25\text{mA}$
		-	195	330		$I_C = 1.25\text{A}, I_B = 125\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	-	1020	1100	mV	$I_C = 1.25\text{A}, I_B = 125\text{mA}$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$	-	895	1000	mV	$I_C = 1.25\text{A}, V_{CE} = 2\text{V}$
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f_T	-	180	-	MHz	$I_C = 50\text{mA}, V_{CE} = 10\text{V}, f = 100\text{MHz}$
Collector Output Capacitance	C_{obo}	-	6	8	pF	$V_{CB} = 10\text{V}, f = 1\text{MHz}$
Turn-On Time	$t_{(on)}$	-	182	-	ns	$V_{CC} = 10\text{V}, I_C = 1\text{A},$
Turn-Off Time	$t_{(off)}$	-	379	-	ns	$I_{B1} = -I_{B2} = 10\text{mA}$

 Note: 9. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

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

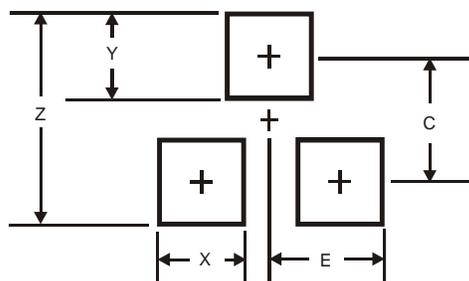


Package Outline Dimensions



SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	8°		
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35