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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Summary

BV_{CEO} > -20V

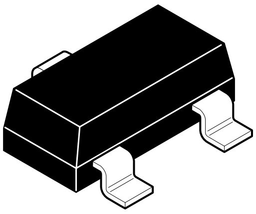
BV_{ECO} > -4V

$I_{C(cont)}$ = 1.5A

$V_{CE(sat)}$ < 85 mV @ 1A

$R_{CE(sat)}$ = 54mΩ

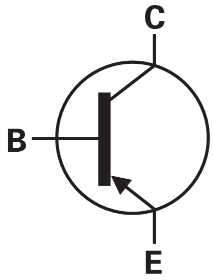
P_D = 350mW



Complementary part number NK-ZXTN25020DFL

Description

Advanced process capability has been used to achieve high current gain hold up making this device ideal for applications requiring high pulse currents.

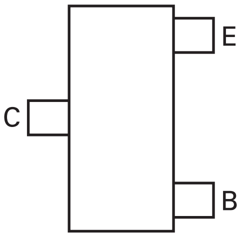


Features

- High peak current
- Low saturation voltage

Applications

- DC-DC converters
- MOSFET and IGBT gate driving



Pinout - top view

Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Collector-base voltage	V_{CBO}	-25	V
Collector-emitter voltage (forward blocking)	V_{CEO}	-20	V
Emitter-collector voltage (reverse blocking)	V_{ECO}	-4	V
Emitter-base voltage	V_{EBO}	-7	V
Continuous collector current	I_C	-1.5	A
Base current	I_B	-500	mA
Peak pulse current	I_{CM}	-6	A
Power dissipation at T_{amb} =25°C(a) Linear derating factor	P_D	350 2.8	mW mW/°C
Operating and storage temperature range	T_j, T_{stg}	-55 to 150	°C

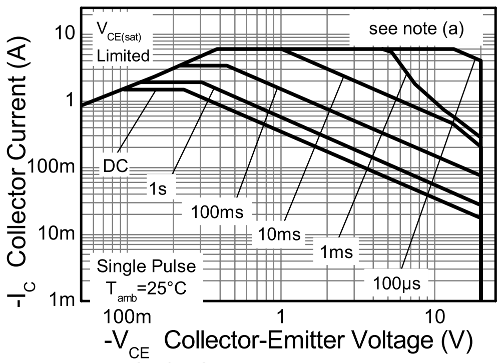
Thermal resistance

Parameter	Symbol	Limit	Unit
Junction to ambient(a)	$R_{\Theta JA}$	357	°C/W

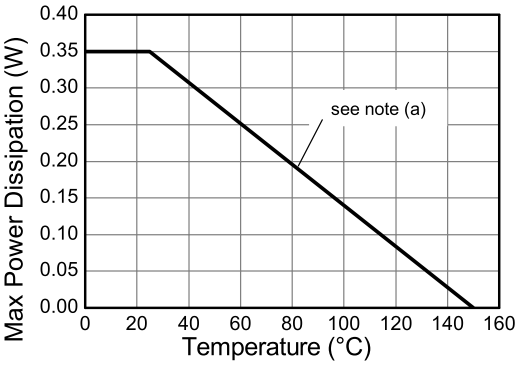
NOTES:

(a) For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

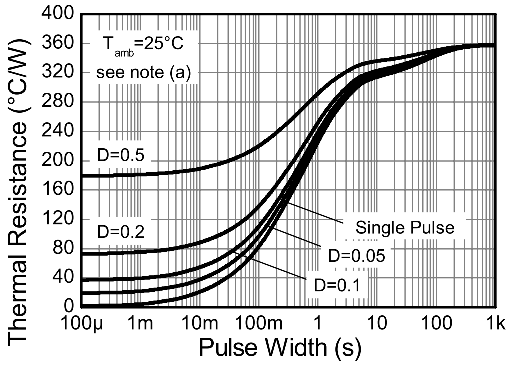
Characteristics



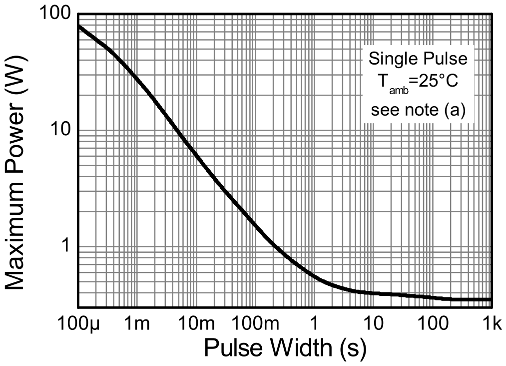
Safe Operating Area



Derating Curve



Transient Thermal Impedance



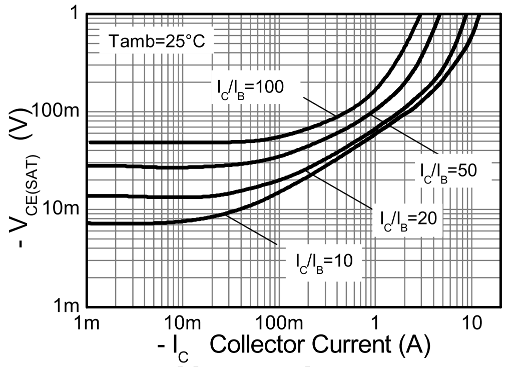
Pulse Power Dissipation

Electrical characteristics (at T_{amb} = 25°C unless otherwise stated)

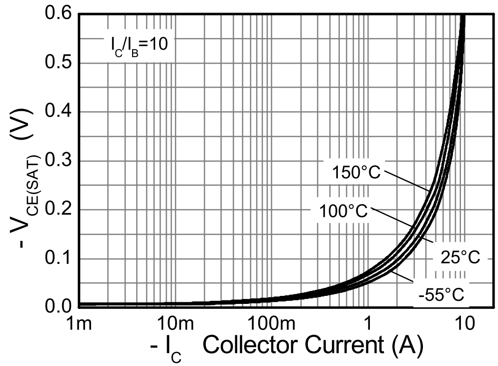
Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-25	-55		V	I_C = -100μA
Collector-emitter breakdown voltage (base open)	BV_{CEO}	-20	-45		V	I_C = -10mA (*)
Emitter-base breakdown voltage	BV_{EBO}	-7	-8.3		V	I_E = -100μA
Emitter-collector breakdown voltage (reverse blocking)	BV_{ECO}	-4	-8.5		V	I_E = -100uA(*)
Collector cut-off current	I_{CBO}		<-1	-50 -20	nA μA	V_{CB} = -20V V_{CB} = -20V, T_{amb}= 100°C
Emitter cut-off current	I_{EBO}		<-1	-50	nA	V_{EB} = -5.6V
Collector-emitter saturation voltage	$V_{CE(sat)}$		-65 -160 150 -210 -215	-85 -225 -195 -275 260	mV mV mV mV mV	I_C = -1A, I_B = -100mA(*) I_C = -1A, I_B = -10mA(*) I_C = -1.5A, I_B = -30mA(*) I_C = -2A, I_B = -40mA(*) I_C = -4A, I_B = -400mA(*)
Base-emitter saturation voltage	$V_{BE(sat)}$		-845	-950	mV	I_C = -1.5A, I_B = -30mA(*)
Base-emitter turn-on voltage	$V_{BE(on)}$		-785	-900	mV	I_C = -1.5A, V_{CE} = -2V(*)
Static forward current transfer ratio	h_{FE}	300 160 60	450 250 90 15	900		I_C = -10mA, V_{CE} = -2V(*) I_C = -1.5A, V_{CE} = -2V(*) I_C = -4A, V_{CE} = -2V(*) I_C = -10A, V_{CE} = -2V(*)
Transition frequency	f_T		290		MHz	I_C = -50mA, V_{CE} = -10V f = 50MHz
Output capacitance	C_{obo}		21	30	pF	V_{CB} = -10V, f = 1MHz(*)
Delay time	$t_{(d)}$		14.2			V_{CC} = -10V. I_C = -1A, I_{B1} = I_{B2}= -50mA.
Rise time	$t_{(r)}$		16.3			
Storage time	$t_{(s)}$		186			
Fall time	$t_{(f)}$		32.7			

NOTES:
(*) Measured under pulsed conditions. Pulse width ≤300μs; duty cycle ≤2%.

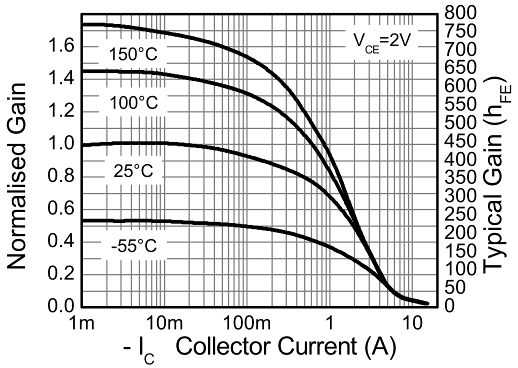
Typical characteristics



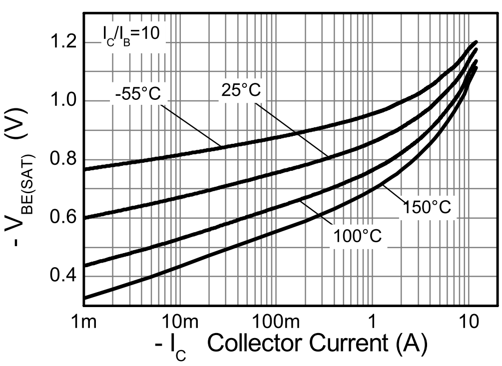
$V_{CE(SAT)}$ v I_C



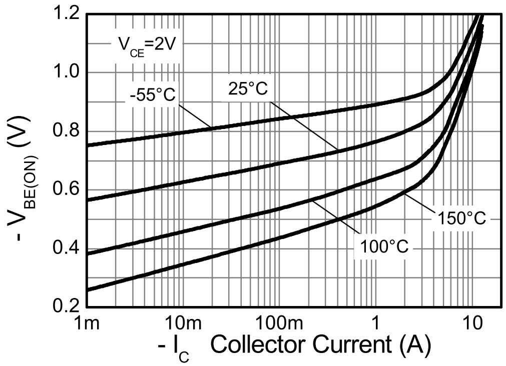
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C

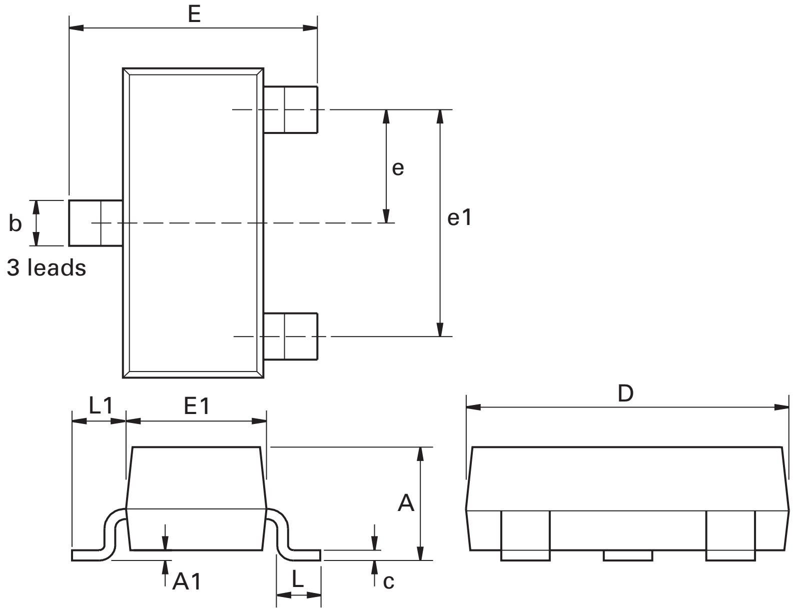


$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C

Package outline - SOT23



Dim	Millimeters		Inches		Dim	Millimeters		Inches	
	Min	**Max**	**Min**	**Max**		**Min**	**Max**	**Max**	**Max**
A	-	1.12	-	0.044	e1	1.90 NOM		0.075 NOM	
A1	0.01	0.10	0.0004	0.004	E	2.10	2.64	0.083	0.104
b	0.30	0.50	0.012	0.020	E1	1.20	1.40	0.047	0.055
C	0.085	0.120	0.003	0.008	L	0.25	0.62	0.018	0.024
D	2.80	3.04	0.110	0.120	L1	0.45	0.62	0.018	0.024
e	0.95 NOM		0.0375 NOM		-	-	-	-	-

Note: Controlling dimensions are in millimeters. Approximate dimensions are provided in inches