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

企业微信二维码　　　企业QQ二维码

Summary

$BV_{CEO} > -15V$

$BV_{ECO} > -3V$

$I_{C(cont)} = -4A$

$R_{CE(sat)} = 33m\Omega$

$V_{CE(sat)} < -55mV$ @ 1A

$P_D = 1.25W$

**Complementary part number** NK-ZXTN25015DFH

Description

Advanced process capability and package design have been used to maximize the power handling and performance of this small outline transistor. The compact size and ratings of this device make it ideally suited to applications where space is at a premium.

Features

- High power dissipation SOT23 package
- High peak current
- Low saturation voltage
- 15V forward blocking voltage
- 3V reverse blocking voltage

Applications

- MOSFET and IGBT gate driving
- DC - DC converters
- Motor drive
- High side driver
- Load disconnect switch
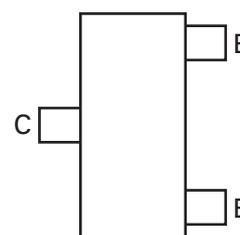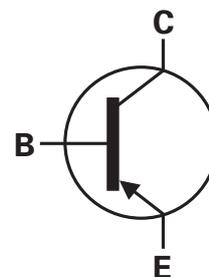
Pinout - top view

Absolute maximum ratings

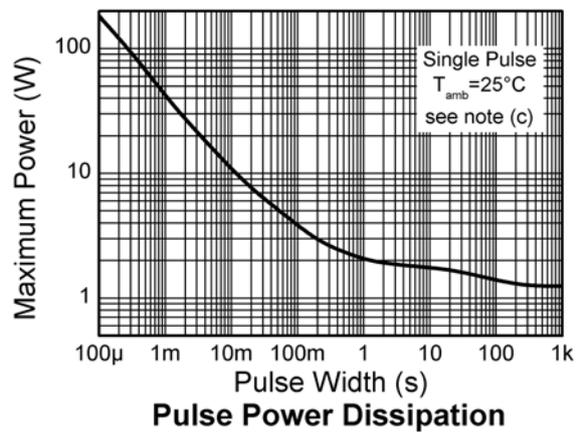| Parameter	Symbol	Limit	Unit
Collector-base voltage	V_{CBO}	-15	V
Collector-emitter voltage	V_{CEO}	-15	V
Emitter-collector voltage (reverse blocking)	V_{ECO}	-3	V
Emitter-base voltage	V_{EBO}	-7	V
Continuous collector current[b]	I_C	-4	A
Base current	I_B	-1	A
Peak pulse current	I_{CM}	-10	A
Power dissipation at T_{amb} =25°C[a]	P_D	0.73	W
Linear derating factor		5.84	mW/°C
Power dissipation at T_{amb} =25°C[b]	P_D	1.05	W
Linear derating factor		8.4	mW/°C
Power dissipation at T_{amb} =25°C[c]	P_D	1.25	W
Linear derating factor		9.6	mW/°C
Power dissipation at T_{amb} =25°C[d]	P_D	1.81	W
Linear derating factor		14.5	mW/°C
Operating and storage temperature range	T_j, T_{stg}	-55 to 150	°C

Thermal resistance
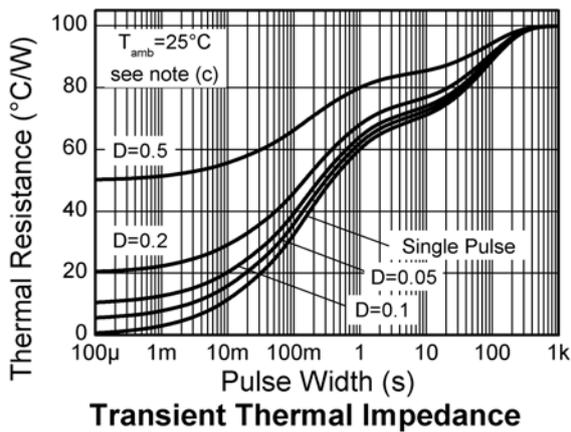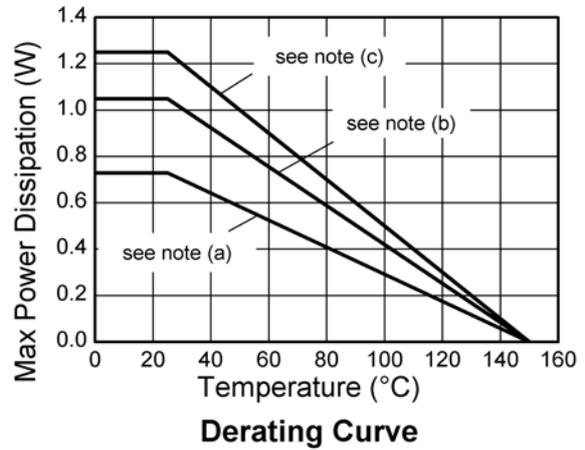
Parameter	Symbol	Limit	Unit
Junction to ambient[a]	$R_{\Theta JA}$	171	°C/W
Junction to ambient[b]	$R_{\Theta JA}$	119	°C/W
Junction to ambient[c]	$R_{\Theta JA}$	100	°C/W
Junction to ambient[d]	$R_{\Theta JA}$	69	°C/W

NOTES:
(a) For a device surface mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
(b) Mounted on 25mm x 25mm x 1.6mm FR4 PCB with a high coverage of single sided 2 oz copper in still air conditions.
(c) Mounted on 50mm x 50mm x 1.6mm FR4 PCB with a high coverage of single sided 2 oz copper in still air conditions.
(d) As (c) above measured at t<5secs.

Characteristics

**Safe Operating Area**

Derating Curve


Transient Thermal Impedance

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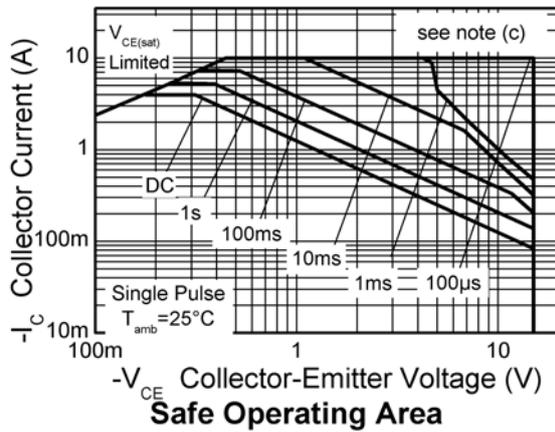
Electrical characteristics (at T_{amb} = 25°C unless otherwise stated)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-15	-35		V	I_C = -100μA
Collector-emitter breakdown voltage (base open)	BV_{CEO}	-15	-30		V	I_C = -10mA [*]
Emitter-base breakdown voltage	BV_{EBO}	-7	-8.4		V	I_E = -100μA
Emitter-collector breakdown voltage (base open)	BV_{ECO}	-3	-8.2		V	I_E = -100μA[*]
Collector-base cut-off current	I_{CBO}		<-1	-50 / -20	nA / μA	V_{CB} = -12V / V_{CB} = -12V, T_{amb}= 100°C
Emitter-base cut-off current	I_{EBO}		<-1	-50	nA	V_{EB} = -5.6V
Collector-emitter saturation voltage	$V_{CE(sat)}$		-45	-55	mV	I_C = -1A, I_B = -100mA[*]
			-110	-150	mV	I_C = -1A, I_B = -10mA[*]
			-130	-175	mV	I_C = -2A, I_B = -40mA[*]
			-160	-210	mV	I_C = -4A, I_B = -200mA[*]
			-165	-220	mV	I_C = -5A, I_B = -500mA[*]
Base-emitter saturation voltage	$V_{BE(sat)}$		-930	-1050	mV	I_C = -4A, I_B = -200mA[*]
Base-emitter turn-on voltage	$V_{BE(on)}$		-810	-900	mV	I_C = -4A, V_{CE} = -2V[*]
Static forward current transfer ratio	h_{FE}	300	450	900		I_C = -10mA, V_{CE} = -2V[*]
		200	315			I_C = -1A, V_{CE} = -2V[*]
		90	145			I_C = -4A, V_{CE} = -2V[*]
			30			I_C = -10A, V_{CE} = -2V[*]
Transition frequency	f_T		295		MHz	I_C = -50mA, V_{CE} = -10V f = 100MHz
Output capacitance	C_{OBO}		25	30	pF	V_{CB} = -10V, f = 1MHz[*]
Delay time	t_d		33.8		ns	V_{CC} = -15V.
Rise time	t_r		43.5		ns	I_C = -750mA,
Storage time	t_s		196		ns	I_{B1} = I_{B2}= -15mA
Fall time	t_f		51.7		ns	

NOTES:
(*) Measured under pulsed conditions. Pulse width $\leq$ 300μs; duty cycle $\leq$ 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
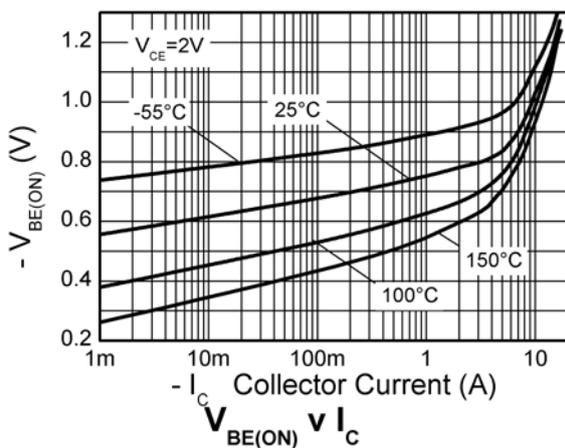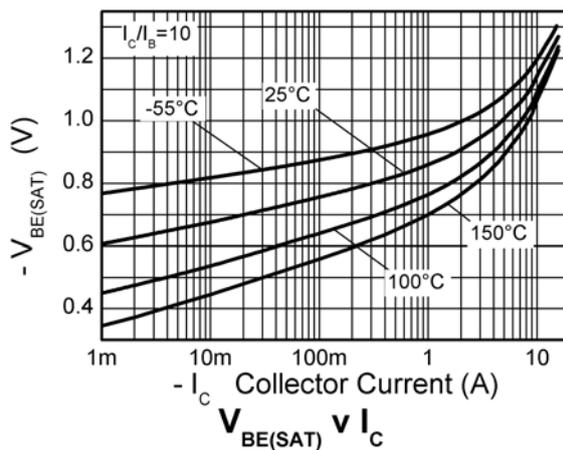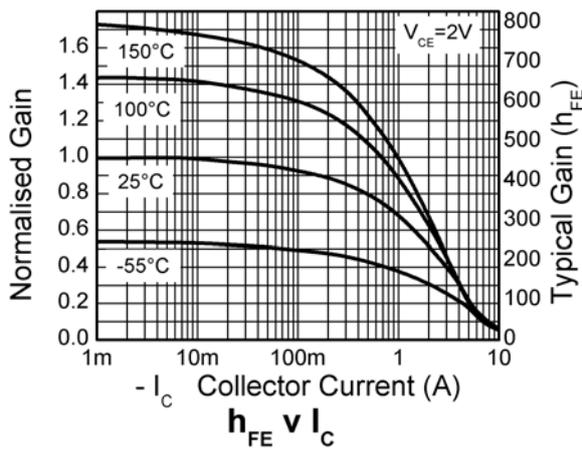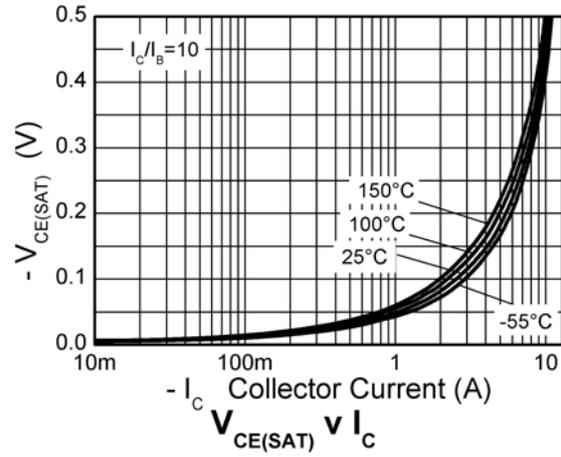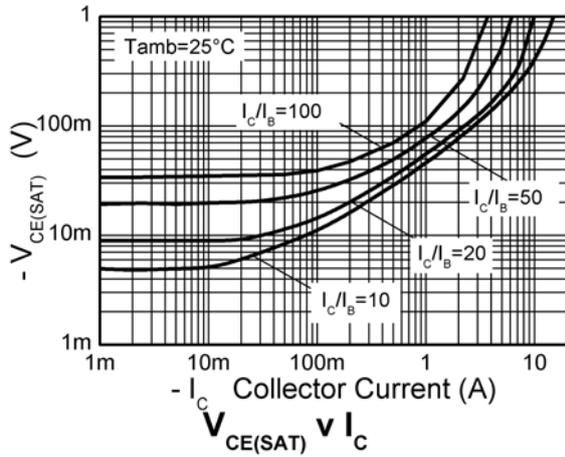
Package outline - SOT23
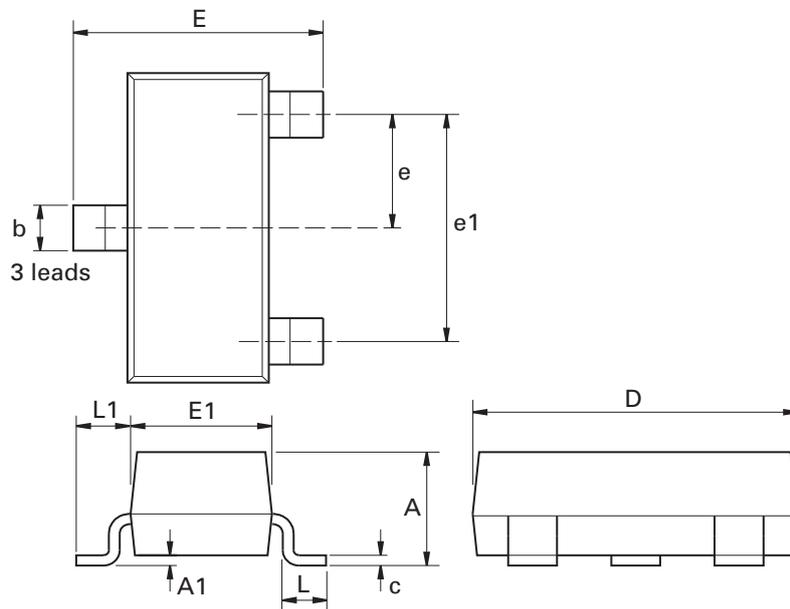
Dim	Millimeters		Inches		Dim	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	-	1.12	-	0.044	e1	1.90 NOM		0.075 NOM	
A1	0.01	0.10	0.0004	0.004	E	2.10	2.64	0.083	0.104
b	0.30	0.50	0.012	0.020	E1	1.20	1.40	0.047	0.055
c	0.085	0.20	0.003	0.008	L	0.25	0.60	0.0098	0.0236
D	2.80	3.04	0.110	0.120	L1	0.45	0.62	0.018	0.024
e	0.95 NOM		0.037 NOM		-	-	-	-	-

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