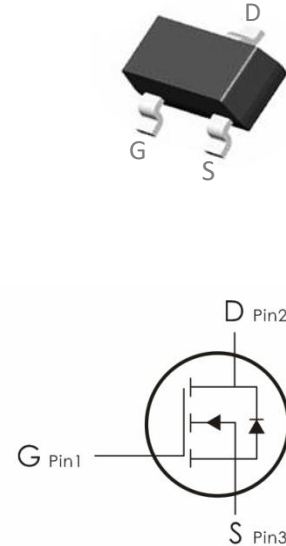


Description:

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge. It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=30V, I_D=5.8A, R_{DS(ON)}<24m\ \Omega$ @ $V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
DO3404BA	3404B	SOT-23-3	3000pcs/Reel

Absolute Maximum Ratings: ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_A=25^\circ\text{C}$	5.8	A
	Continuous Drain Current- $T_A=100^\circ\text{C}$	3	
I_{DM}	Pulsed Drain Current ¹	21	
P_D	Power Dissipation	1.1	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ³	111	$^\circ\text{C}/\text{W}$

Electrical Characteristics: ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=30V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	1.2	1.8	2.3	V
$R_{DS(on)}$	Drain-Source On Resistance ⁴	$V_{GS}=10V, I_D=5A$	---	16	24	$\text{m}\Omega$
		$V_{GS}=4.5V, I_D=3A$	---	24	32	$\text{m}\Omega$
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	---	477	---	pF
C_{oss}	Output Capacitance		---	73.5	---	
C_{rss}	Reverse Transfer Capacitance		---	57.7	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=15V, I_D=4.5A,$ $R_{ENG}=3\ \Omega, V_{GS}=10V$	---	7.3	---	ns
t_r	Rise Time		---	15.7	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	13.6	---	ns
t_f	Fall Time		---	6.3	---	ns
Q_g	Total Gate Charge		$V_{GS}=10V, V_{DS}=15V,$ $I_D=4.5A$	---	11.5	---
Q_{gs}	Gate-Source Charge	---		1.9	---	nc
Q_{gd}	Gate-Drain "Miller" Charge ²	---		2.4	---	nc
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_{SD}=5.5A$	---	---	1.2	V
I_S	Continuous Drain Current	$V_D=V_G=0V$	---	---	5.8	A
I_{SM}	Pulsed Drain Current		---	---	21	A
T_{rr}	Reverse Recovery Time	$I_F=4.5A,$	---	8	---	ns
Q_{rr}	Reverse Recovery Charge	$dI/dt=100A/\mu\text{s}$	---	2.8	---	nc

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. $R_{\theta JA}$ is measured with the device mounted on a minimum recommended pad of 2oz copper FR4 PCB.
3. $R_{\theta JA}$ is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB.
4. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.

Typical Characteristics: ($T_A=25^\circ C$ unless otherwise noted)

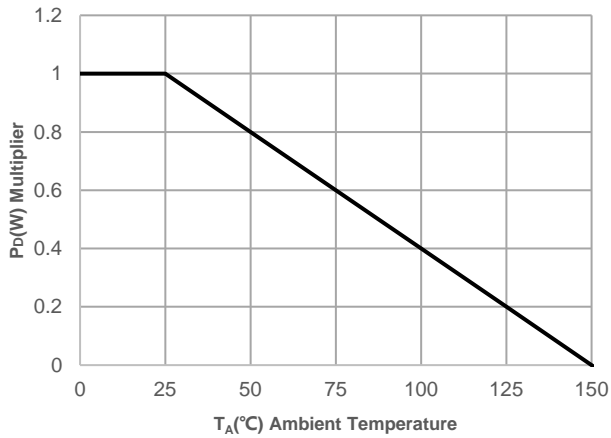


Figure 1: Power De-rating

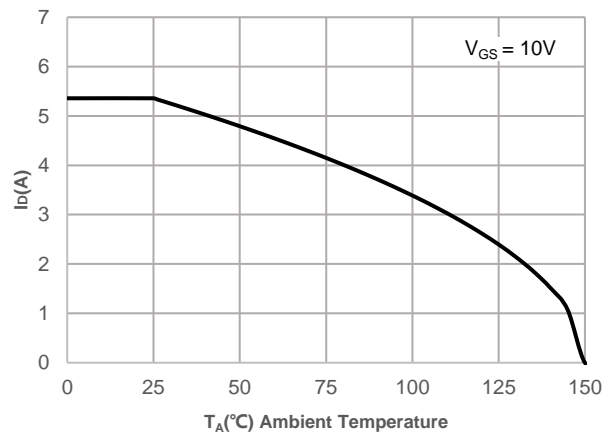


Figure 2: Current De-rating

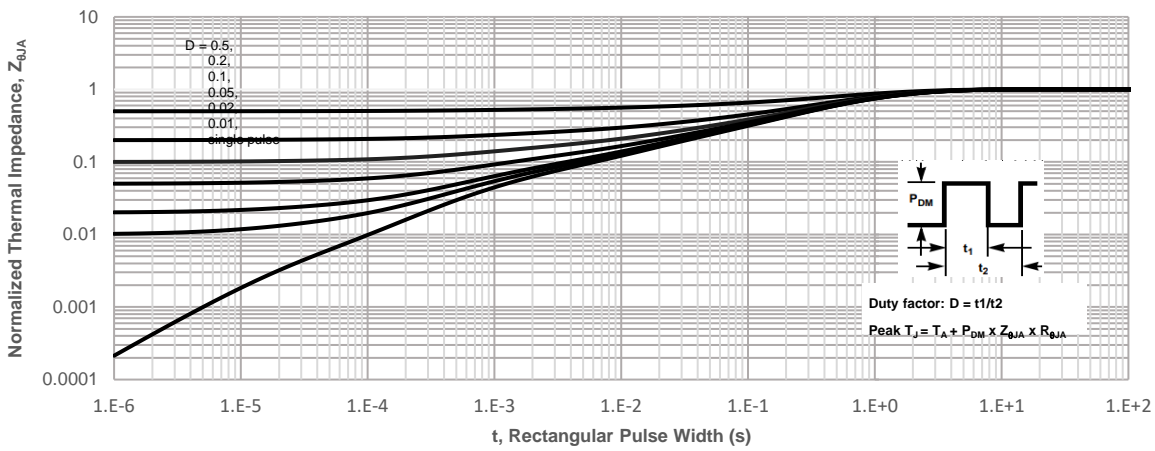


Figure 3: Normalized Maximum Transient Thermal Impedance

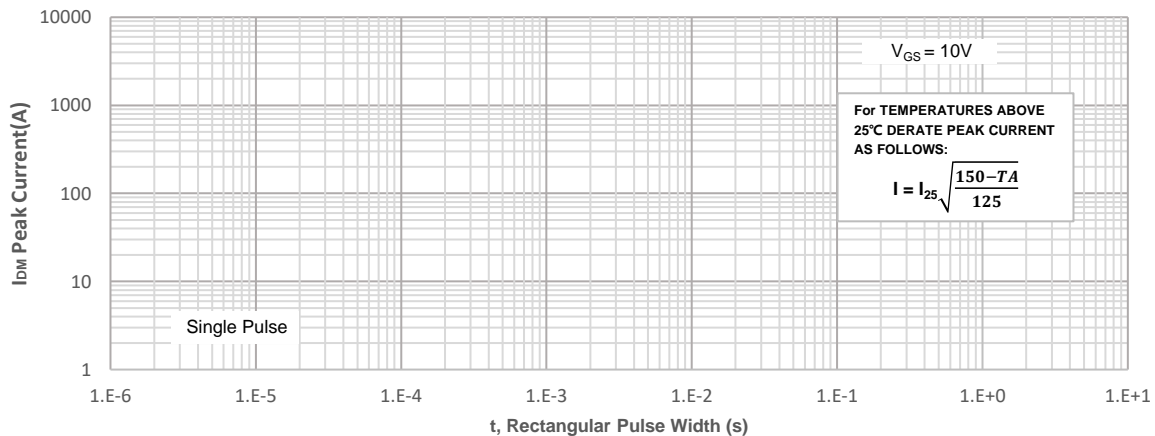


Figure 4: Peak Current Capacity

Figure 5: Output Characteristics

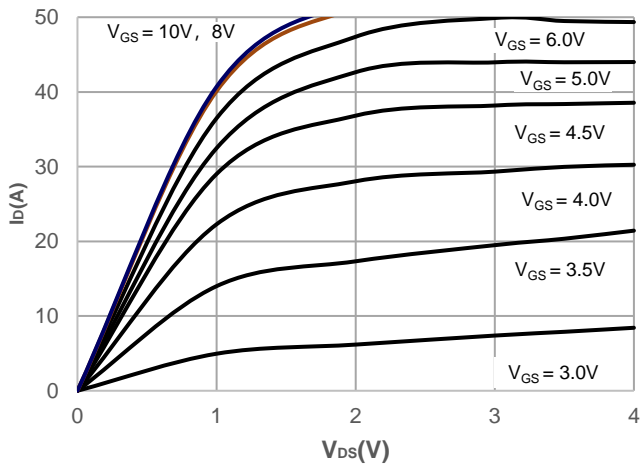


Figure 6: Typical Transfer Characteristics

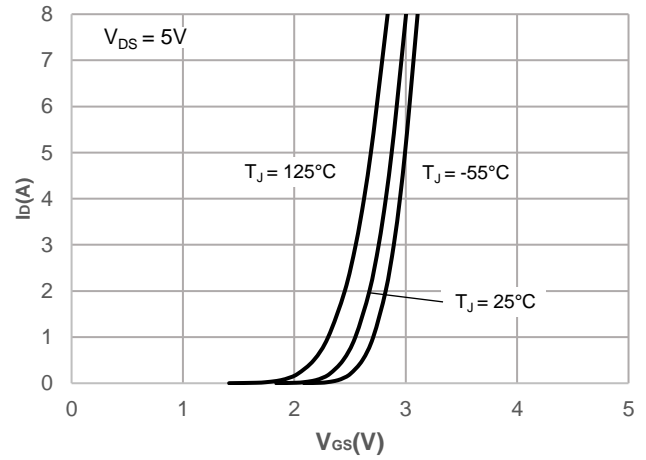


Figure 7: On-resistance vs. Drain Current

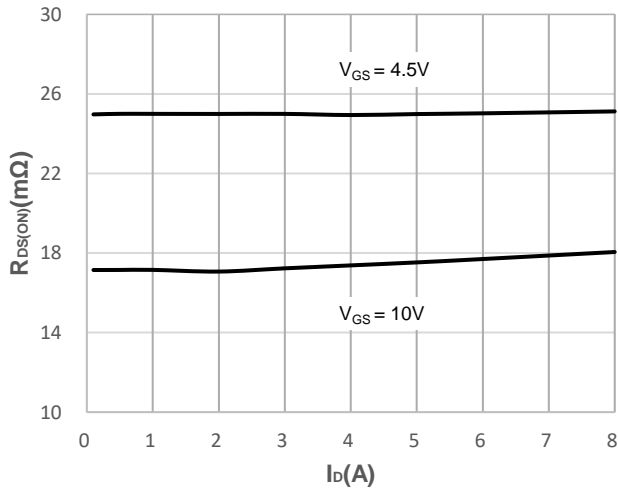


Figure 8: Body Diode Characteristics

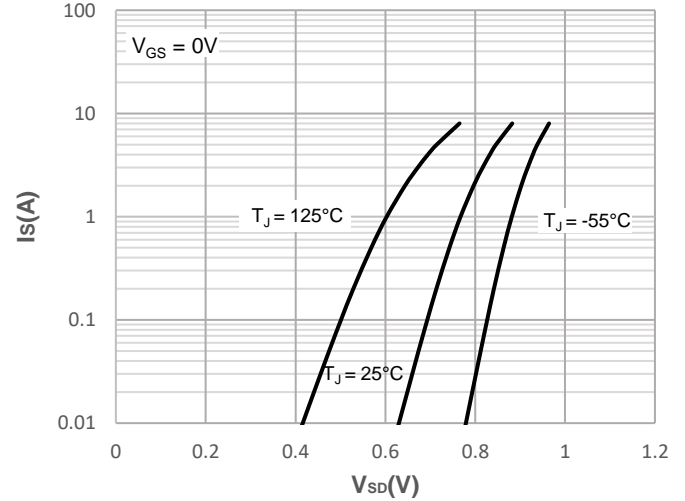


Figure 9: Gate Charge Characteristics

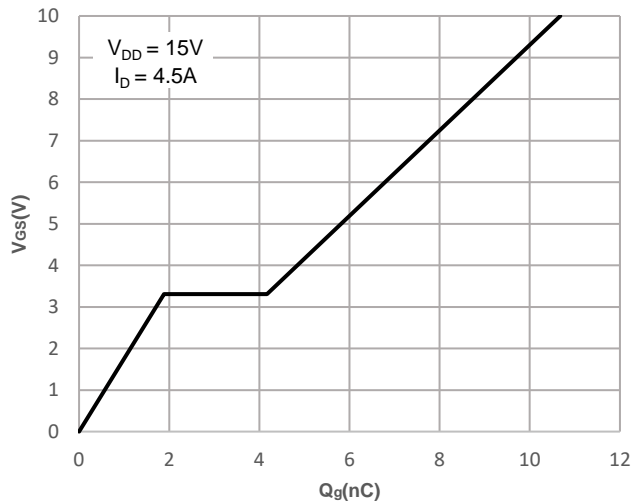
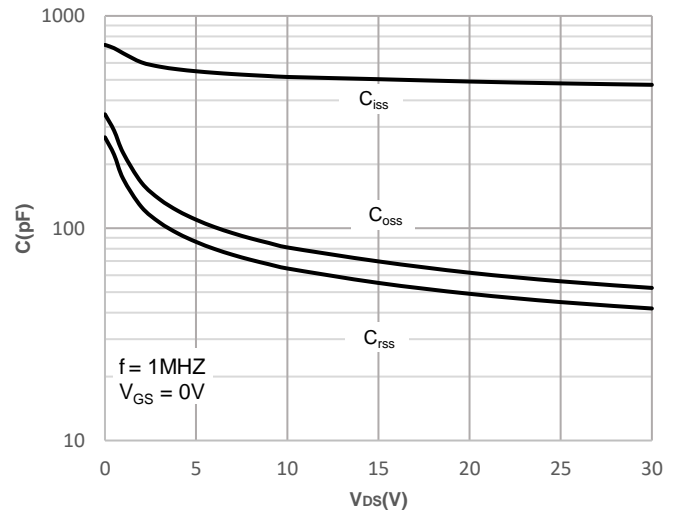


Figure 10: Capacitance Characteristics



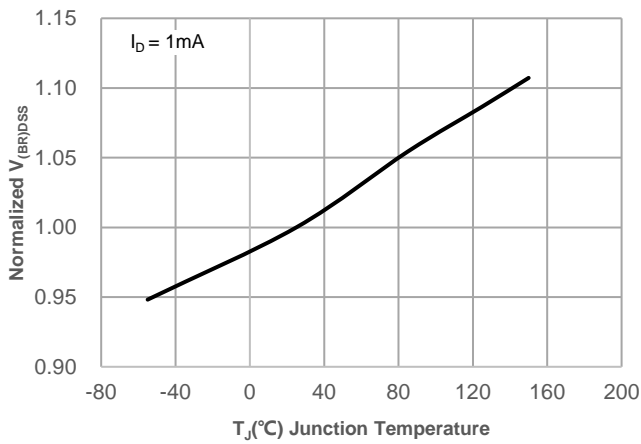


Figure 11: Normalized Breakdown voltage vs. Junction Temperature

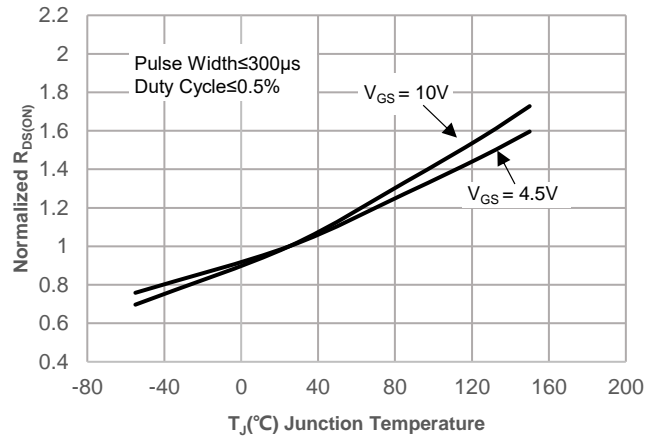


Figure 12: Normalized on Resistance vs. Junction Temperature

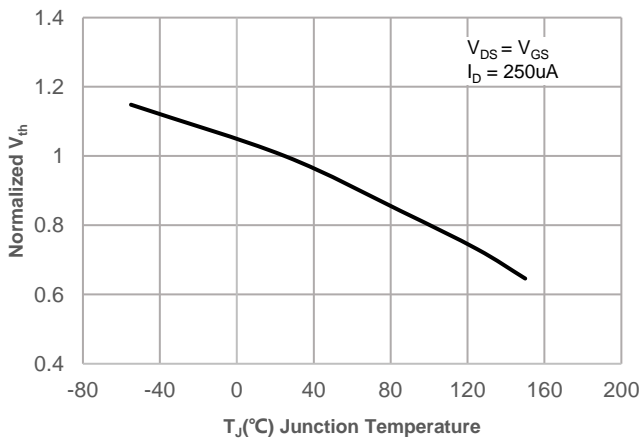


Figure 13: Normalized Threshold Voltage vs. Junction Temperature

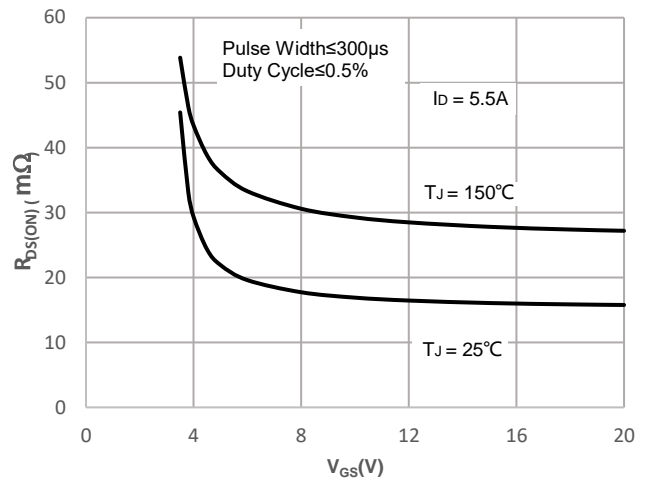


Figure 14: $R_{DS(ON)}$ vs. V_{GS}

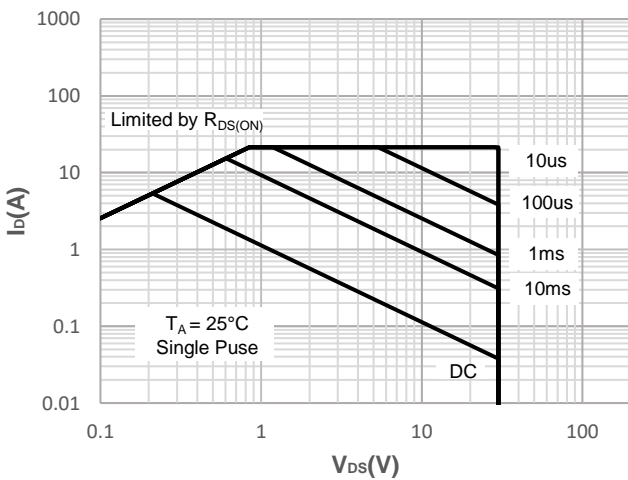
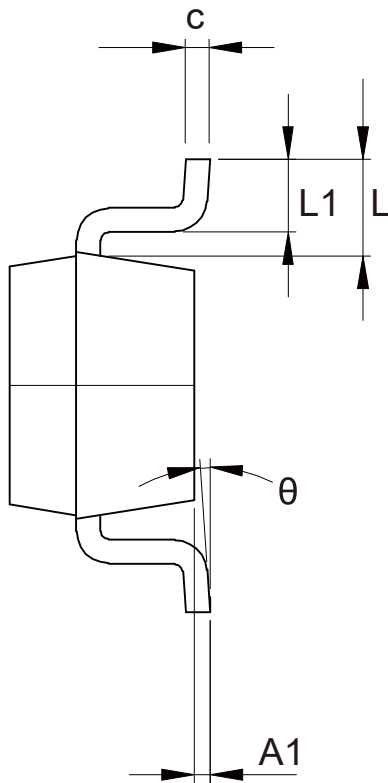
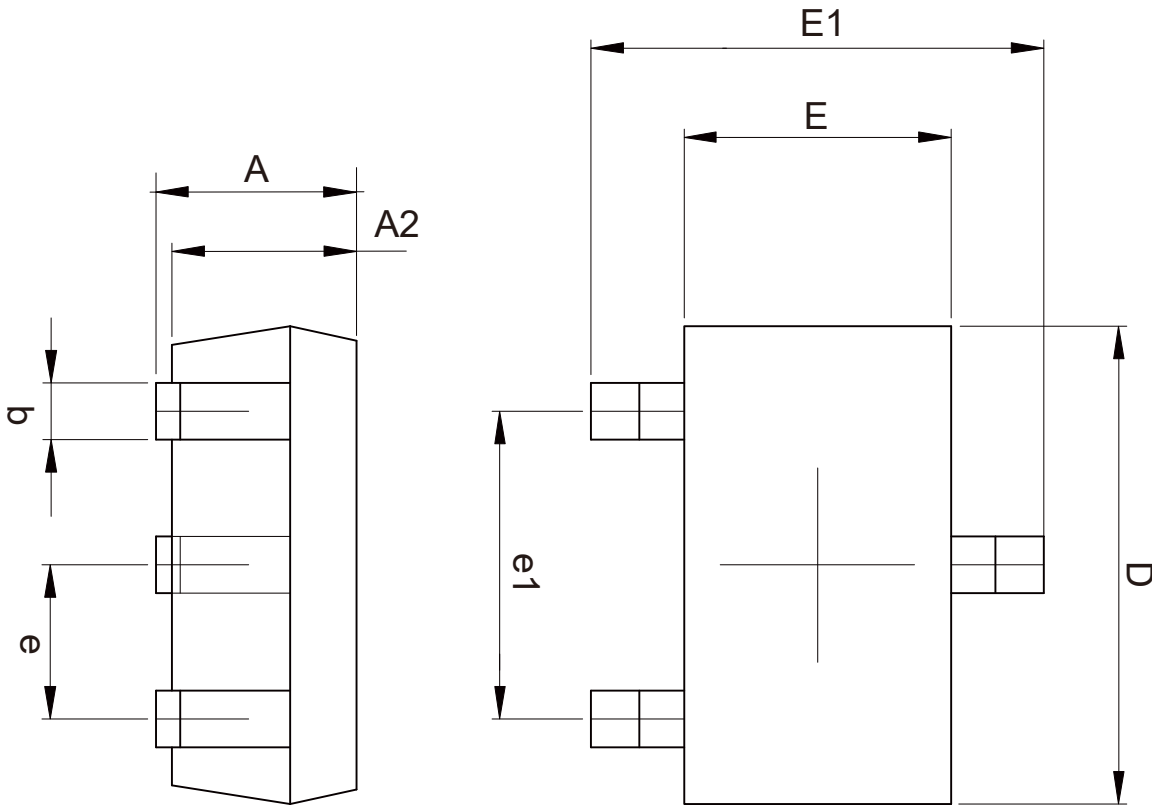


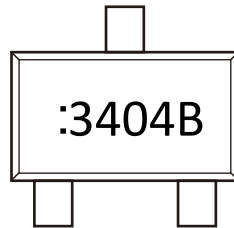
Figure 15: Maximum Safe Operating Area

SOT-23-3 Package Outline Data




COMMON DIMENSIONS			
CUNITS MEASURE=MILLIMETER			
SYMBOL	MIN	NOM	MAX
A	1.050	---	1.300
A1	0.000	---	0.200
A2	1.050	---	1.200
b	0.300	0.400	0.500
c	0.100	---	0.200
D	2.820	2.900	3.020
E	1.500	1.600	1.700
E1	2.650	2.800	2.950
e	0.950TYP		
e1	1.800	1.900	2.000
L	0.6REF		
L1	0.300	0.450	0.600
θ	0°	--	8°

Unit:mm

Marking Information:**Previous Version**

Version	Date	Subjects (major changes since last revision)
2.0	2024-07-16	Release of final version

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