

FrelTec

Mathildenstr. 10A
82319 Starnberg
Germany

N-Channel Mosfet
SOT23

SOT23

SPECIFICATION

65A		2308xxxxxx		ST23		E03
Type		Type		Package		Packing
65A: N-Channel Mosfet		2308		SOT23		E03: Embossed tape and reel for 3k pc (7'REEL)

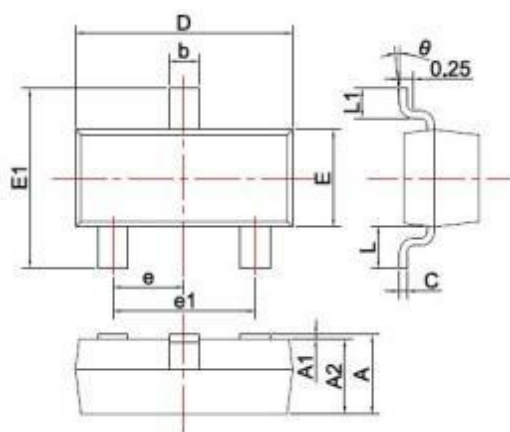
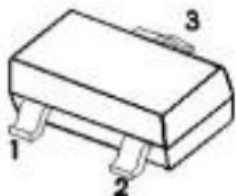
All products according to RoHS (2015/863/EU)

SOT23

FrelTec
N-Channel Mosfet

2308

PACKAGE OUTLINE



SYMBOL	DIMENSIONS	
	MIN	MAX
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Unit: mm

6/27/2024

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3/9

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SOT23

FrelTec N-Channel Mosfet

Absolute Maximum Ratings TA = 25°C unless otherwise noted

Maximum Ratings & Thermal Characteristics (Ratings at 25°C ambient temperature unless otherwise specified.)

Parameters	Symbol	Value	Unit
Drain-Source Voltage	VDS	60	V
Gate-Source Voltage	VGS	±20	V
Continuous Drain Current	ID	1,8	A
Pulsed Drain Current(note1)	IDM	10	
Continuous Source Current (Diode Conduction)	IS	1	A
Power Dissipation	PD	350	mW
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-50-+150	°C
Thermal Resistance From Junction to Ambient(note2)	RθJA	125	°C/W

Electrical Characteristics (Ratings at 25°C ambient temperature unless otherwise specified).

Parameter	Symbols	Test Condition	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	VGS=0V, ID=250uA	60			V
Gate-Threshold voltage(note3)	V _{GS(th)}	VDS=VGS, ID=250uA	1,0		2,0	V
Gate-body Leakage	IGSS	VDS=0V, VGS=±12V			±100	nA
Zero Gate Voltage Drain current	IDSS	VDS=44V, VGS=0V			1	uA
On=State Drain Current	ID(ON)	VDS≥5V, VGS=4,5V	10		1	A
Drain-Source On-Resistance (note3)	RDS(ON)	VGS=10V, ID=1,8A		135	160	mΩ
		VGS=4,5V, IC=1,5A		154	200	
Forward trans conductance(note3)	gfs	VDS=5V, ID=2,1A		10		S
Diode forward voltage(note3)	VSD	IS=1A, VGS=0V			1,0	V
Dynamic Characteristics(note4)						
Input capacitance	Ciss	VDS=25V, VGS=0V,f=1MHz		295		pF
Output capacitance	Coss			40		
Reverse Transfer capacitance	Crss			15		
Total gate charge	Qg	VDS=27V, VGS=4,5V, ID=2,1A		2,1	3,9	nC
Gate-source charge	Qgs			0,6		
Gate-drain charge	Qgd			0,8		
Switching (b)						
Turn-on Time	td(on)	VDD=27V, RL=10Ω, VGEN=4,5V, ID=1,0A, RG=6Ω		3,6		ns
Rise time	tr			3,5		
Turn-off Time	td(off)			32		
Fall time	tf			3		

Notes: 1, Repetitive rating: Pulse width limited by junction temperature.

2, Surface mounted on FR4 board, t≤10s.

3, Pulse Test: Pulse Width ≤300us, Duty Cycle≤2%.

4. Guaranteed by design, not subject to producing.

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4/9

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Typical characteristics

Typical Characteristics

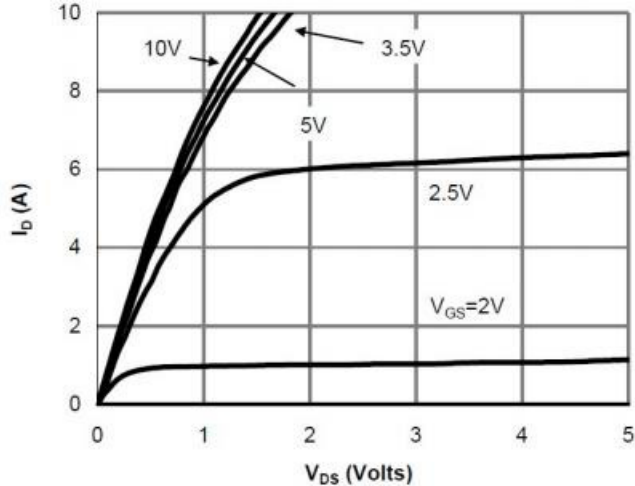


Fig 1: On-Region characteristics

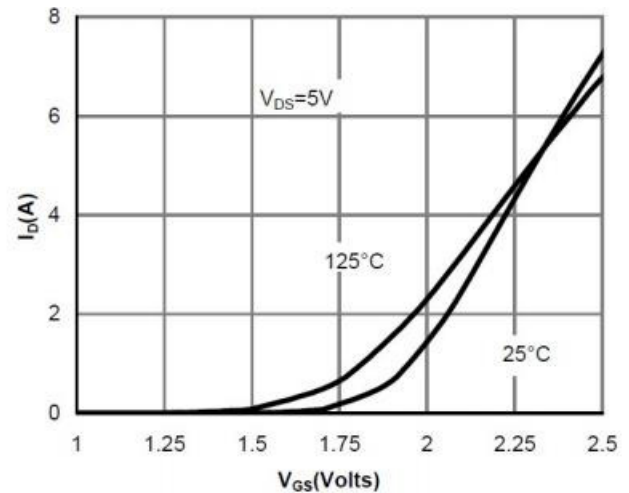


Figure 2: Transfer Characteristics

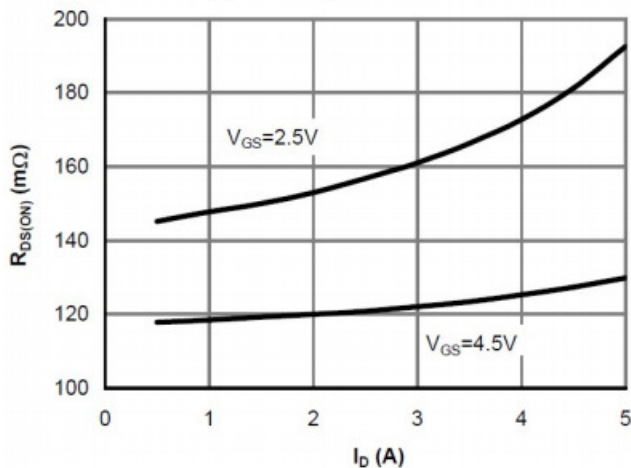


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

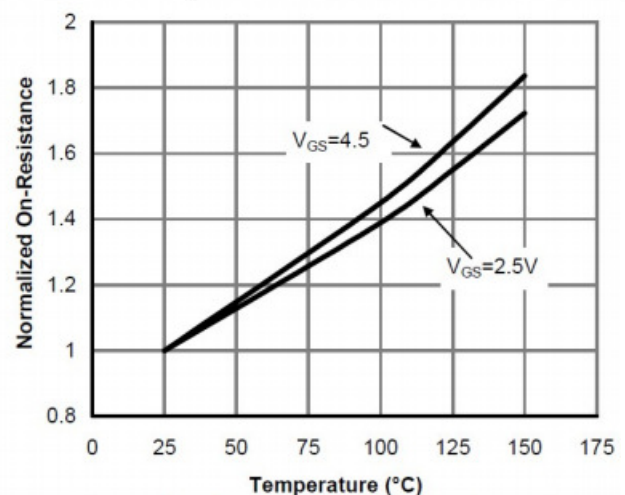


Figure 4: On-Resistance vs. Junction Temperature

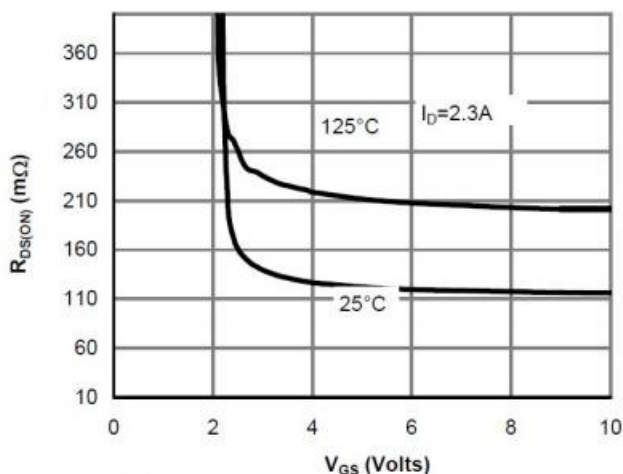


Figure 5: On-Resistance vs. Gate-Source Voltage

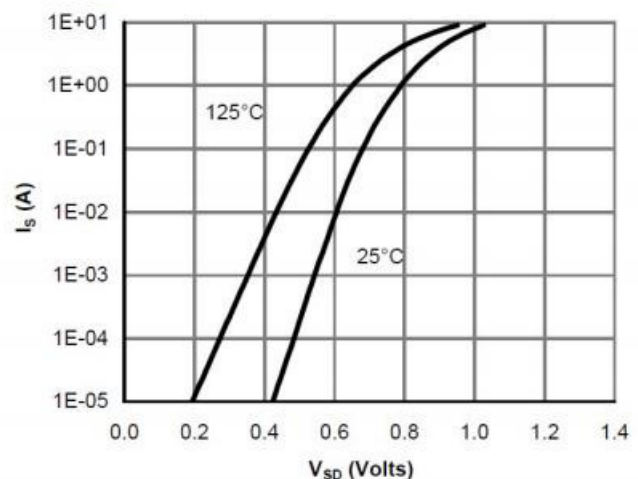


Figure 6: Body-Diode Characteristics

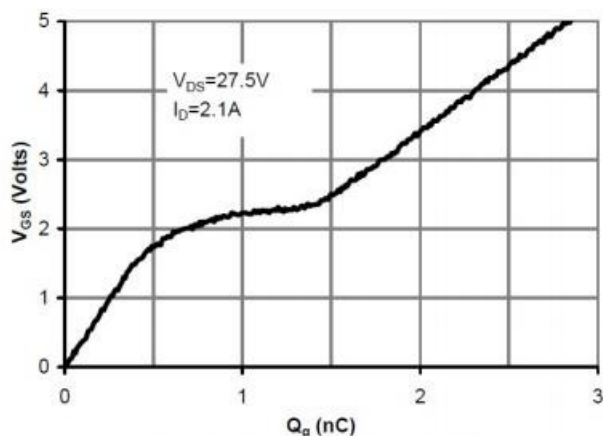


Figure 7: Gate-Charge Characteristics

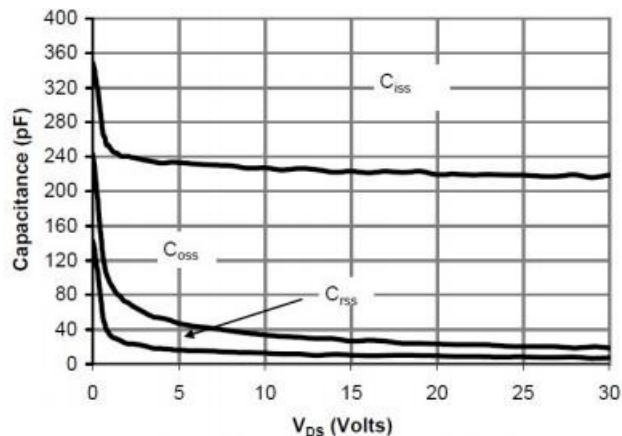


Figure 8: Capacitance Characteristics

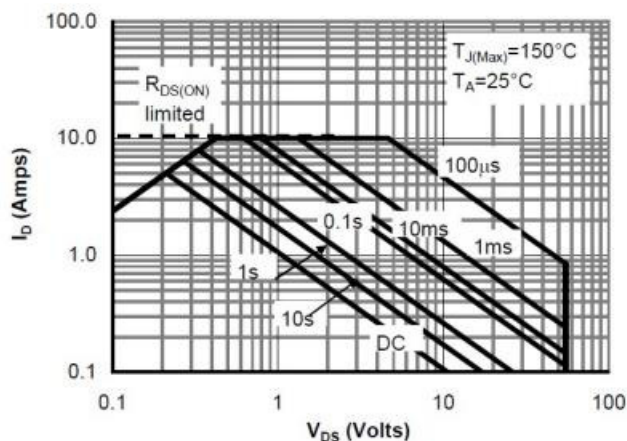


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

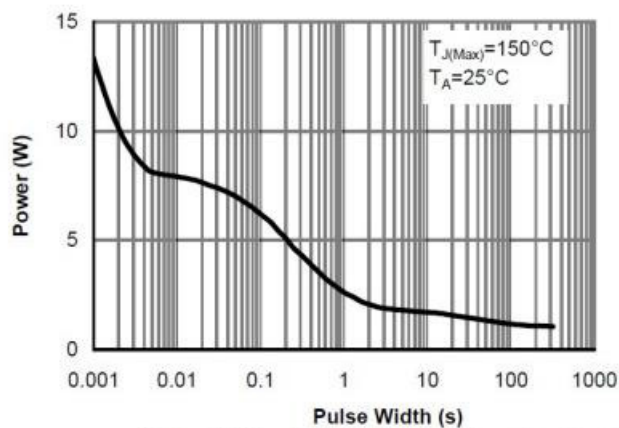


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

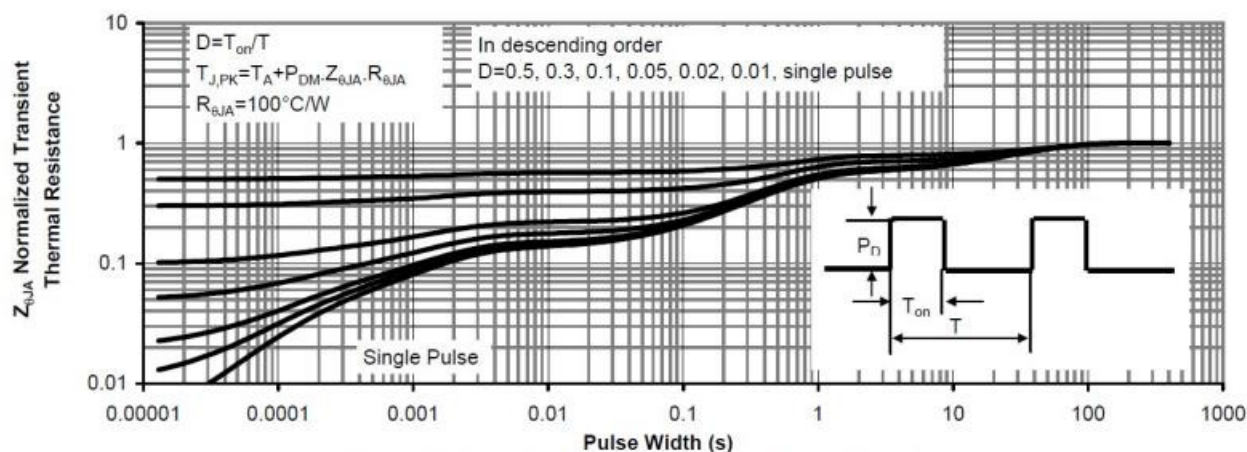
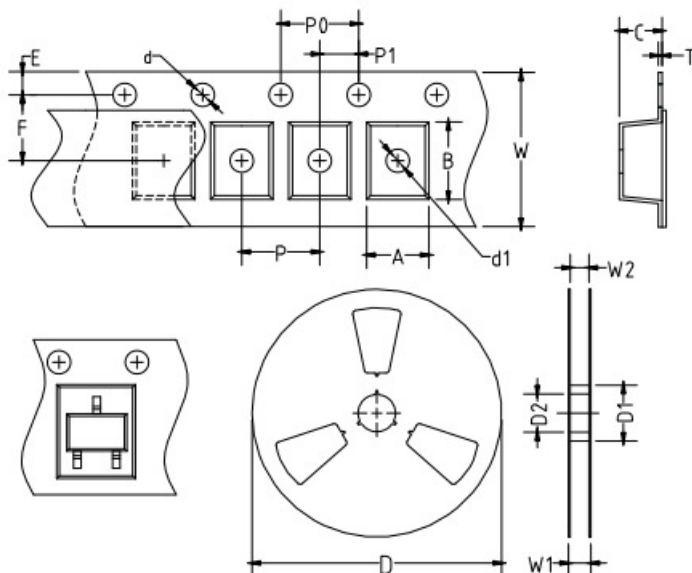


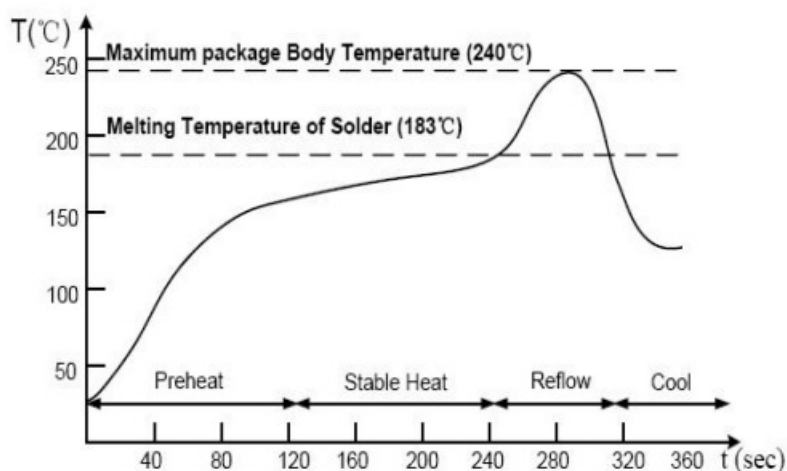
Figure 11: Normalized Maximum Transient Thermal Impedance

Packag Information

Size (Unit:mm)



Item	Symbol	SOT-23
Carrier width	A	3.15±0.10
Carrier length	B	2.77±0.10
Carrier depth	C	1.22±0.10
Sprocket hole	d	1.50±0.10
Carrier hole	d1	1.00±0.10
Reel outside diameter	D	177.8±1.0
Reel inner diameter	D1	50±1.0
Feed hole diameter	D2	13.0±1.0
Sprocket hole position	E	1.75±0.10
Punch hole position	F	3.50±0.05
Punch hole pitch	P	4.00±0.10
Sprocket hole pitch	P0	4.00±0.10
Embossment center	P1	2.00±0.10
Total tape thickness	T	0.20±0.10
Tape width	W	7.95±0.15
Reel width	W1	11.4±1.5
Reel width	W2	9.4±1.0

Suggested Soldering Temperature Profile**Note**

- Recommended reflow methods: IR, vapor phase oven, hot air oven, wave solder.
- The device can be exposed to a maximum temperature of 265°C for 10 seconds.
- Devices can be cleaned using standard industry methods and solvents.
- If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

Stock period

The performance of these products, including the solderability, is guaranteed for 12 month, provided that they remain packed as they were when delivered and stored at a temperature of $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and a relative humidity less than 80%RH

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