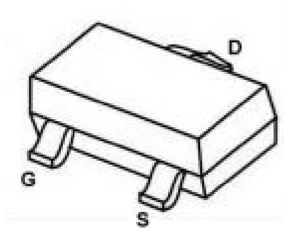
20V N-Channel MOSFET

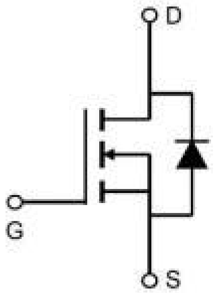
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
20V	32mΩ@4.5V	4.5A
	40mΩ@2.5V	
	70mΩ@1.8V	

SOT-23



Schematic diagram



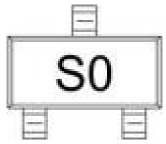
Feature

- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$ and Low Gate Charge

Application

- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch

MARKING:



ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	4.5	A
Pulsed Drain Current(1)	I_{DM}	18	A
Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient(2)	$R_{\theta JA}$	357	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

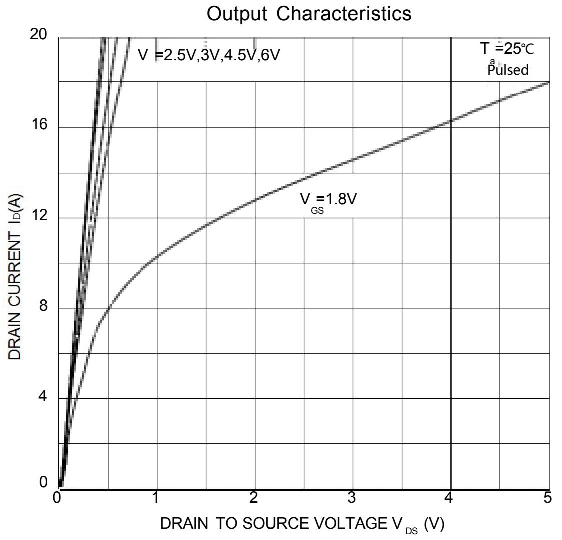
MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

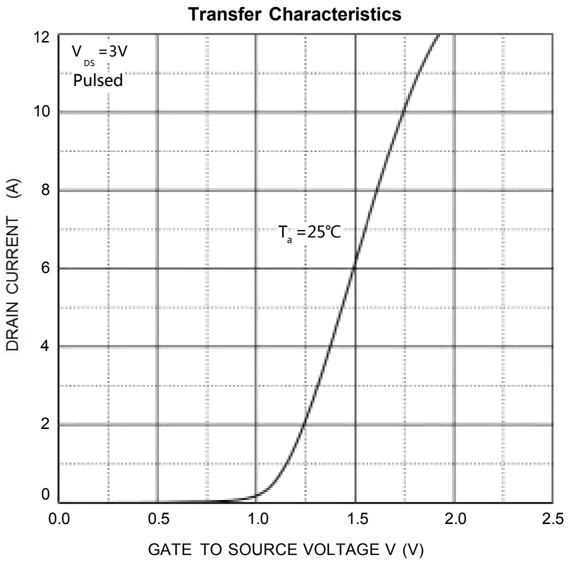
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
STATIC CHARACTERISTICS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D=250μA	20			V
Zero gate voltage drain current	I_{DSS}	V_{DS}=20V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±12V, V_{DS} = 0V			±100	nA
Gate threshold voltage(3)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.45	0.7	1	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS} =4.5V, I_D =3A		21	32	mΩ
		V_{GS} =2.5V, I_D =2A		27	40	
		V_{GS} =1.8V, I_D =2A		44	70	
Forward tranconductance(3)	g_{FS}	V_{DS} =10V, I_D =6A		5		S
DYNAMIC CHARACTERISTICS(4)						
Input Capacitance	C_{iss}	V_{DS} =8V,V_{GS} =0V,f=1MHz		523		pF
Output Capacitance	C_{oss}			99		
Reverse Transfer Capacitance	C_{rss}			75		
SWITCHING CHARACTERISTICS(4)						
Turn-on delay time	$t_{d(on)}$	V_{GS}=4.5V,V_{DS}=10V, I_D=1A,R_{GEN}=6Ω		10.5	21	ns
Turn-on rise time	t_r			4.5	9	
Turn-off delay time	$t_{d(off)}$			27.5	55	
Turn-off fall time	t_f			4.3	8.6	
Total gate charge	Q_g	V_{DS} =10V,V_{GS} =4.5V,I_D =6A		6.4	8.2	nC
Gate-source charge	Q_{gs}			1.8	2.3	
Gate-drain charge	Q_{gd}			1.3	1.9	
SOURCE-DRAIN DIODE CHARACTERISTICS						
Body Diode Voltage(3)	V_{SD}	I_S=1.7A, V_{GS} = 0V		0.8	1.2	V
Continuous Source-Drain Diode Current	I_S	T_C=25℃			1.7	A

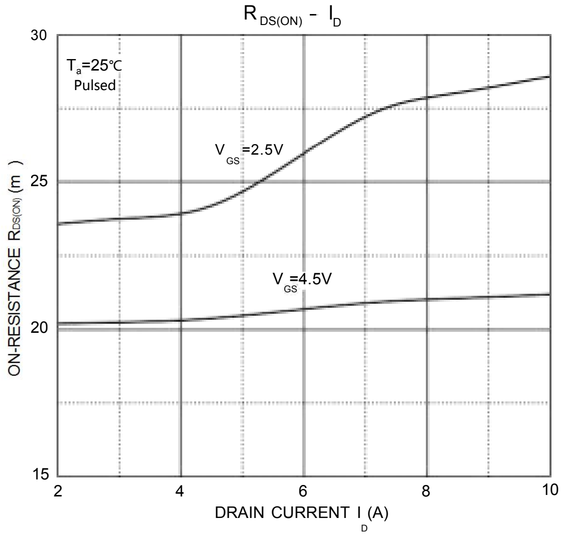
Notes:

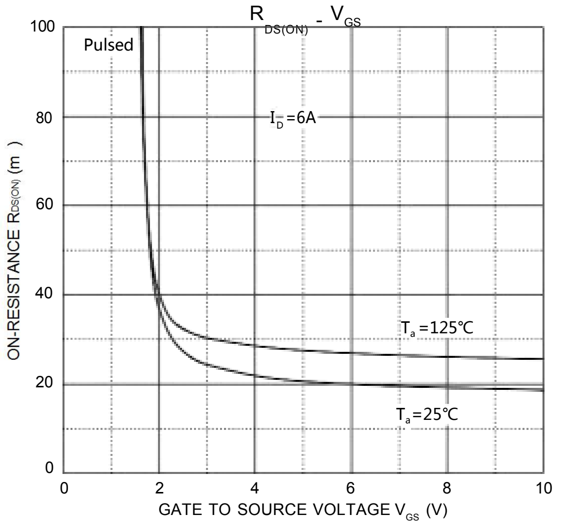
1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board , t≤10s.
3. Pulse Test : Pulse Width≤80μs, Duty Cycle≤0.5%.
4. Guaranteed by design, not subject to producting.

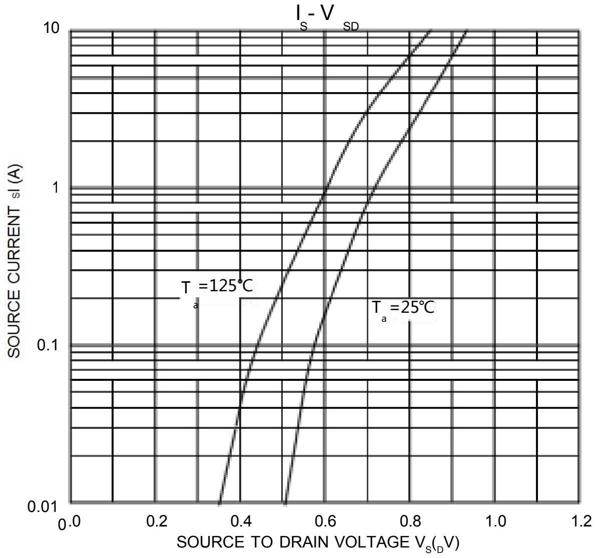
Typical Electrical and Thermal Characteristics

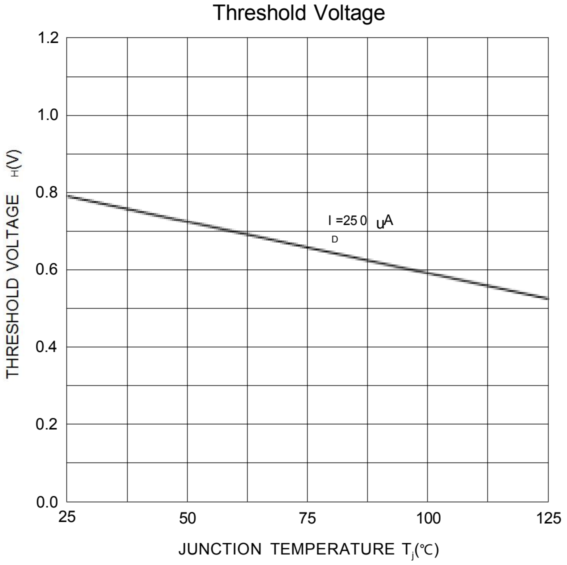




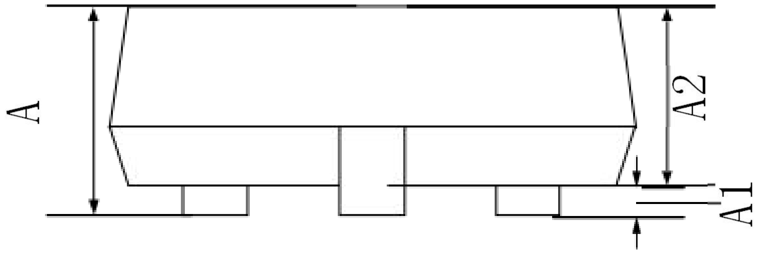


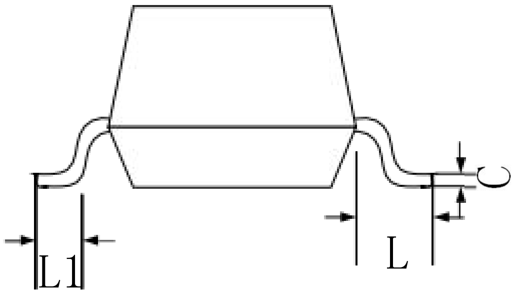


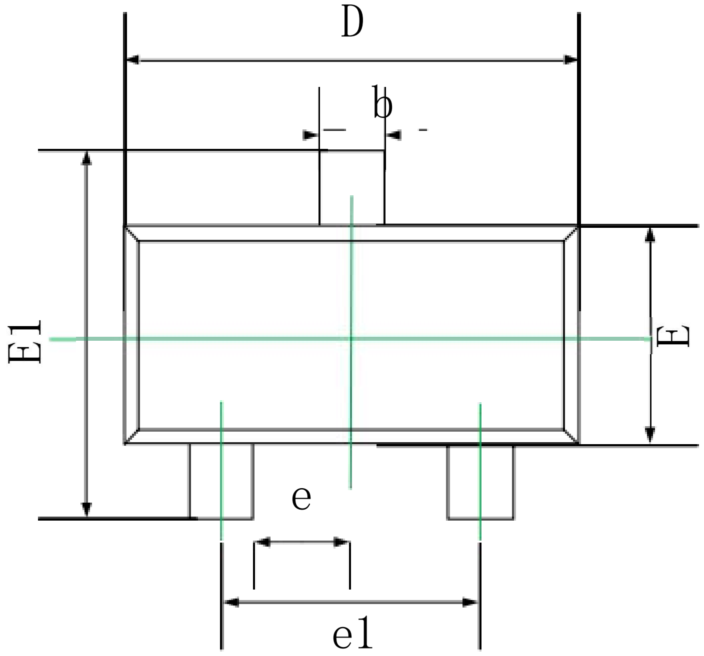




SOT-23 Package Information





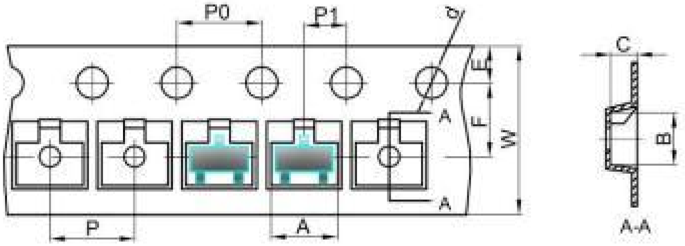


Symbol	Dimensions In Millimeters	
	Min.	Max.
A	0.90	1.15
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
E	1.20	1.40
E1	2.25	2.55
e	0.95 REF.	
e1	1.80	2.00
L	0.55 REF.	
L1	0.30	0.50

SOT-23 Tape and Reel

SOT-23 Tape and reel

SOT-23 Embossed Carrier Tape



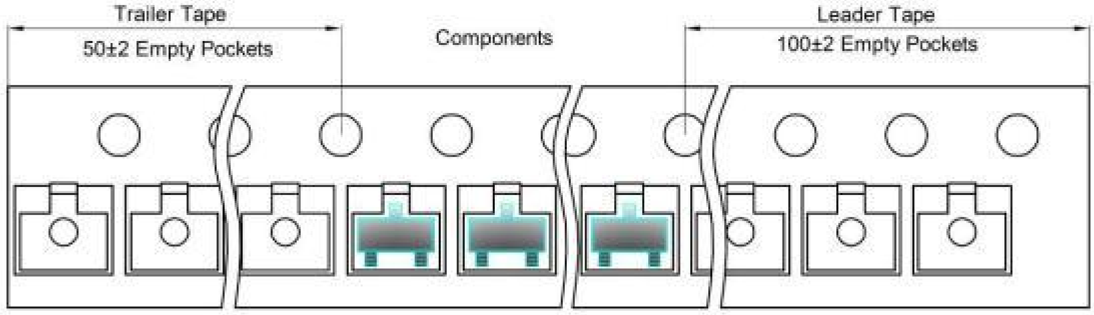
Packaging Description:

SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

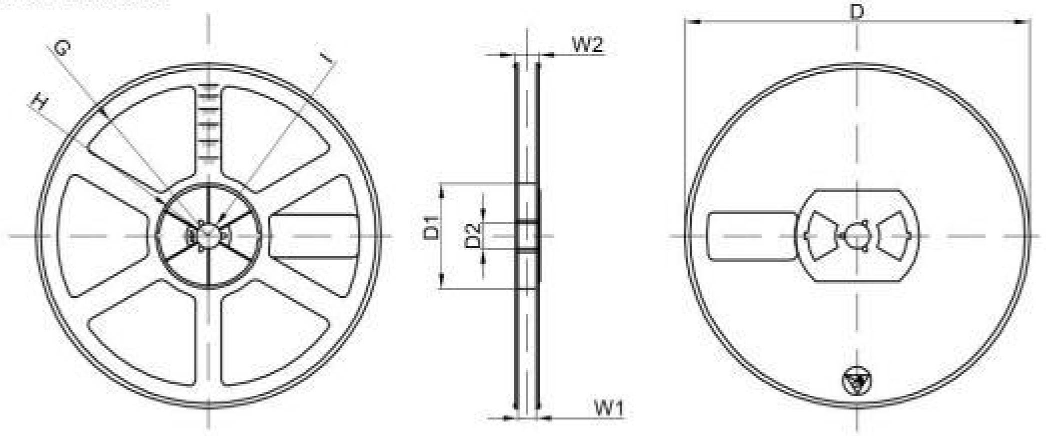
Dimensions are in millimeter

Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer



SOT-23 Reel



Dimensions are in millimeter

Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	30,000 pcs	203×203×195	120,000 pcs	438×438×220	

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