

1.Product Summary

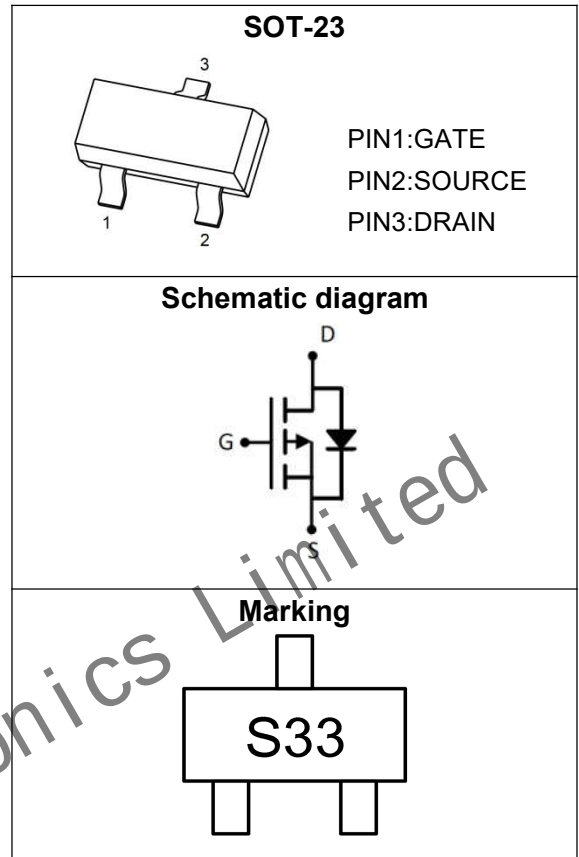
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-12V	19mΩ@-4.5V	-6A
	27mΩ@-2.5V	

2.Features

- V_{DS} -12V
- I_D -6A
- $R_{DS(ON)}$ (at $V_{GS} = -4.5V$) <28 mohm
- $R_{DS(ON)}$ (at $V_{GS} = -2.5V$) <40 mohm
- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$ and Low Gate Charge

3.Applications

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



4.Absolute Maximum rating ($T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V_{DS}	-12	V
Gate - Source Voltage	V_{GS}	±10	V
Continuous Drain Current ^{1,5}	I_D	-6	A
Pulsed Drain Current ²	I_{DM}	-20	A
Power Dissipation ^{4,5}	P_D	1.5	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	83.3	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55~ +150	°C

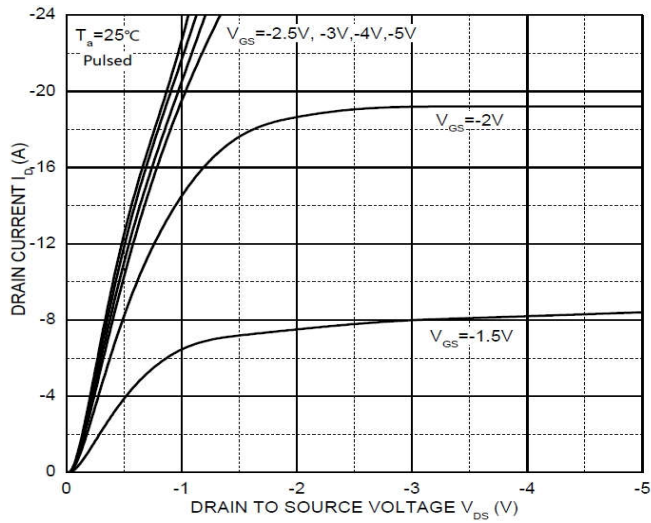
5. Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -12V, V _{GS} = 0V			-1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±8V, V _{DS} = 0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.4	-0.65	-1	V
Drain-source On-resistance ³	R _{DS(on)}	V _{GS} = -4.5V, I _D = -5A		19	28	mΩ
		V _{GS} = -3.7V, I _D = -4.6A		21	32	
		V _{GS} = -2.5V, I _D = -4.3A		27	40	
		V _{GS} = -1.8V, I _D = -1A		35	63	
		V _{GS} = -1.5V, I _D = -0.5A		50	150	
Forward transconductance ³	g _{FS}	V _{DS} = -5V, I _D = -5A		18		S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-6V, V _{GS} =0V, f =1MHz		1275		pF
Output Capacitance	C _{oss}			255		
Reverse Transfer Capacitance	C _{rss}			236		
Gate resistance	R _g	V _{DS} =0V, V _{GS} =0V, f =1MHz	1.9		19	Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} =-6V, V _{GS} =-4.5V, I _D =-5A		14	21	nC
Gate-source Charge	Q _{gs}			2.3		
Gate-drain Charge	Q _{gd}			3.6		
Turn-on Delay Time	t _{d(on)}	V _{DD} =-6V, V _{GEN} =-4.5V, I _D =-4A, R _L =6Ω, R _{GEN} =1Ω		26	40	ns
Turn-on Rise Time	t _r			24	40	
Turn-off Delay Time	t _{d(off)}			45	75	
Turn-off Fall Time	t _f			20	35	
Source - Drain Diode Characteristics						
Diode Forward Voltage ³	V _{SD}	V _{GS} = 0V, I _S = -4A			-1.2	V

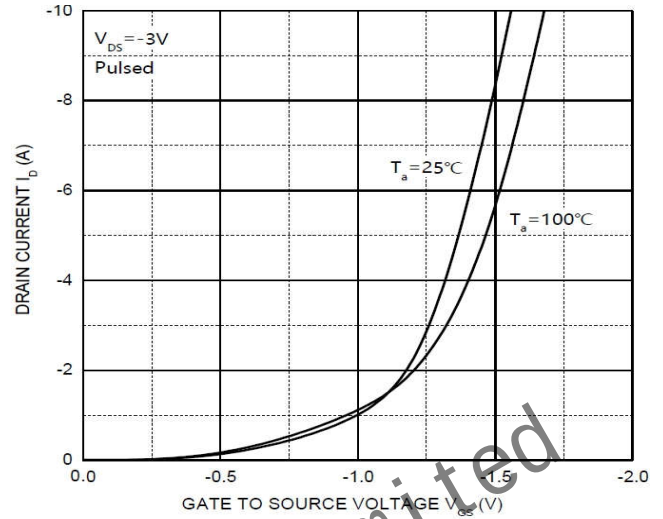
Notes :

1. The maximum current rating is limited by package.
2. Pulse Test : Pulse Width $\leq 10\mu s$, duty cycle $\leq 1\%$.
3. Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. The power dissipation P_D is limited by $T_{J(MAX)} = 150^\circ\text{C}$.
5. Device mounted on $1in^2$ FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$

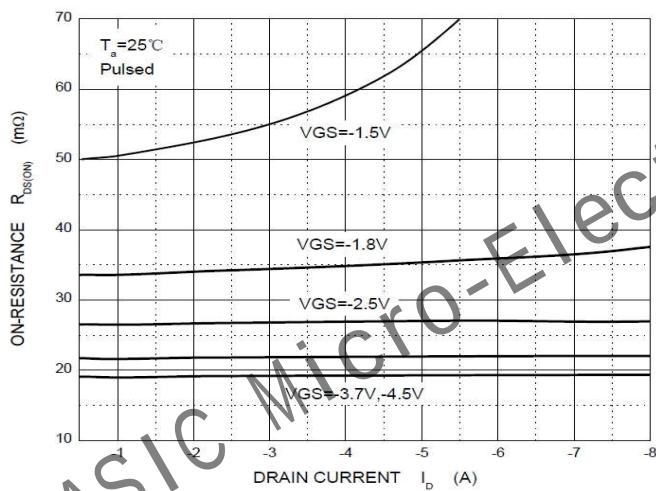
6. Typical Characteristic



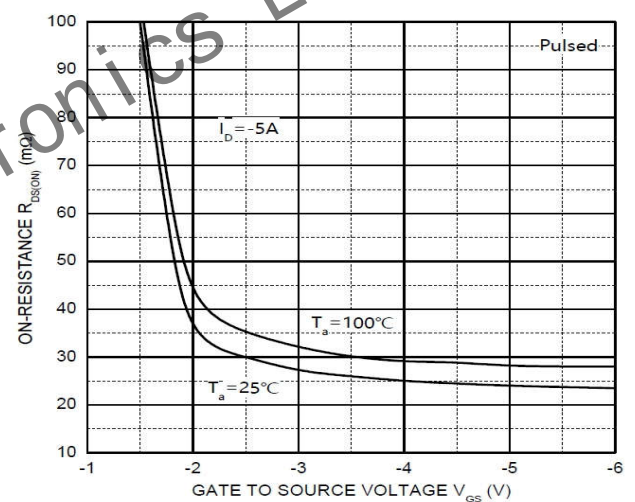
Output Characteristics



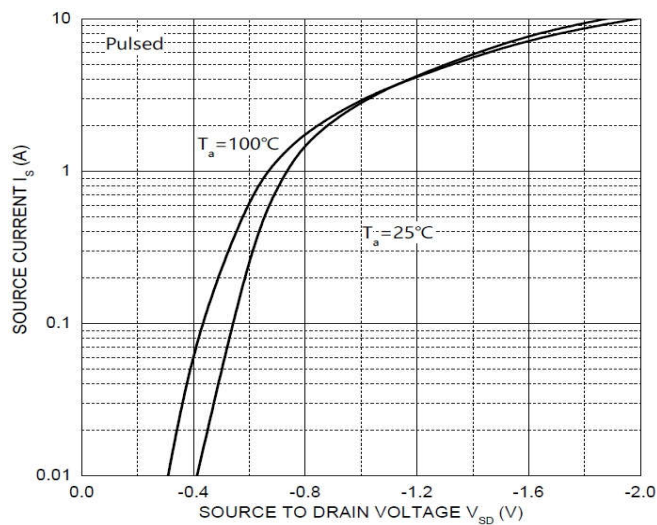
Transfer Characteristics



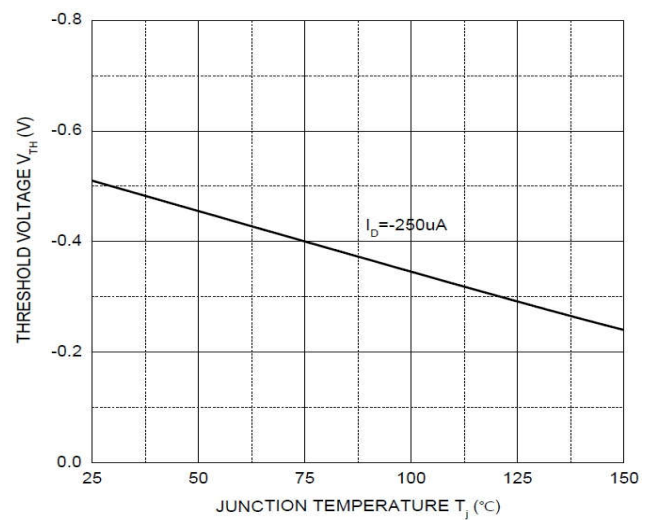
$R_{DS(ON)} - I_D$



$R_{DS(ON)} - V_{GS}$

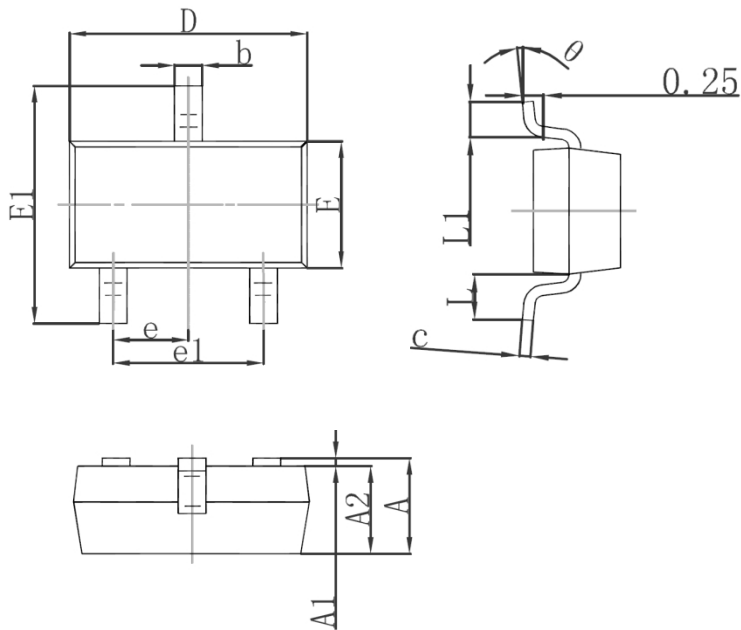


$I_S - V_{SD}$



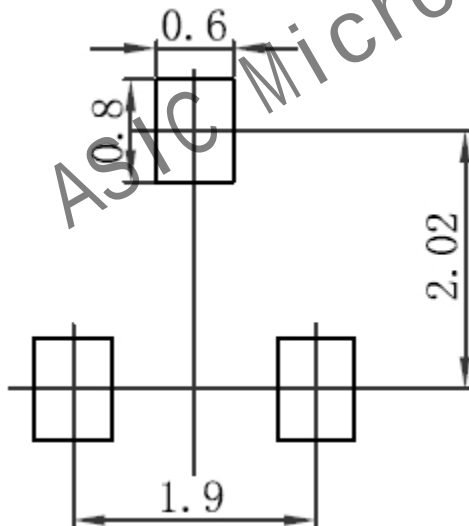
Threshold Voltage

7.Dimension



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

8.Recommended Land Pattern

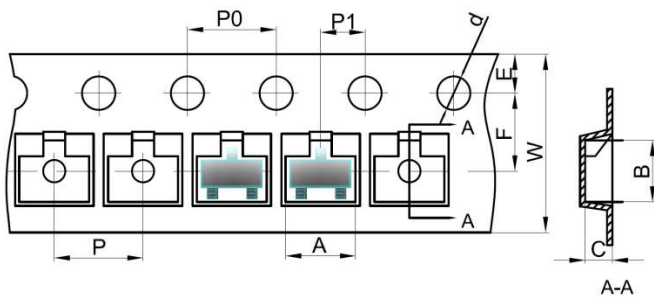


Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference only
4. Unit: mm

9. Tape and Reel

SOT-23 Embossed Carrier Tape

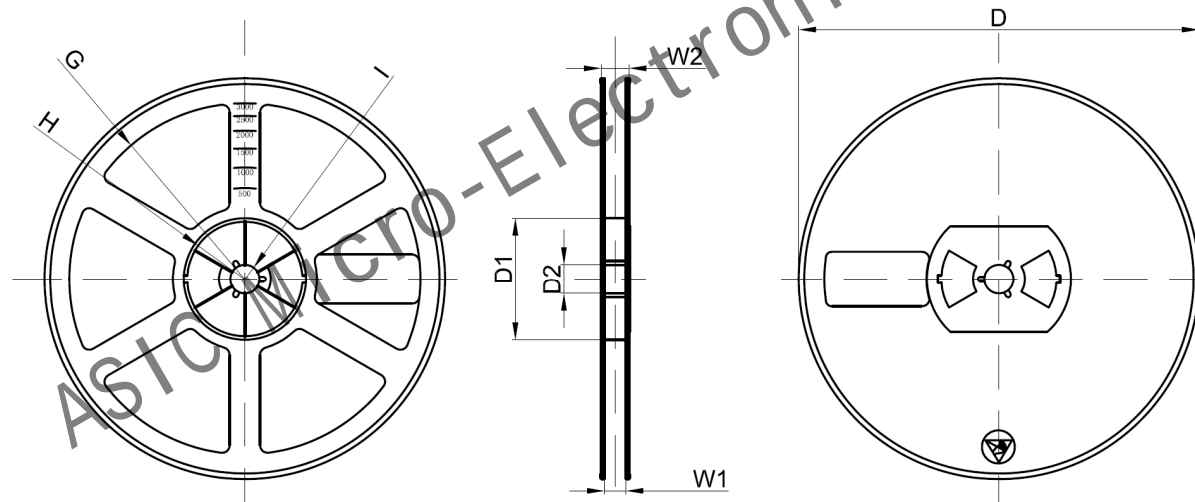


Packaging Description:

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 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	45,000 pcs	203×203×195	180,000 pcs	438×438×220	

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