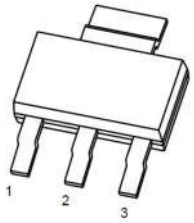
30V N-Channel MOSFET

1.Product Summary

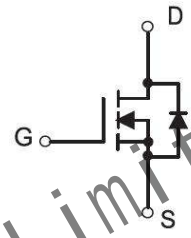
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	18mΩ@10V	7A
	21mΩ@4.5V	

SOT-223

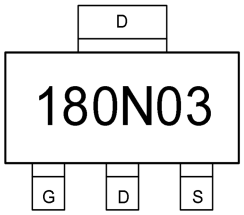


PIN1:GATE
PIN2:DRAIN
PIN3:SOURCE

Schematic diagram



Marking



2.Features

- V_{DS} 30V
- I_D 7A
- $R_{DS(ON)}$(at V_{GS}=10V) ＜30 mohm
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜35 mohm
- TrenchFET Power MOSFET

3.Applications

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

4.Absolute Maximum rating（T_A = 25℃ unless otherwise noted）

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	30	V
Gate - Source Voltage		V_{GS}	±12	V
Continuous Drain Current [1,5]	T_A = 25℃	I_D	7	A
Pulsed Drain Current [2]		I_{DM}	28	A
Power Dissipation [4,5]		P_D	3	W
Thermal Resistance from Junction to Ambient		$R_{\theta JA}$	42	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~ +150	℃

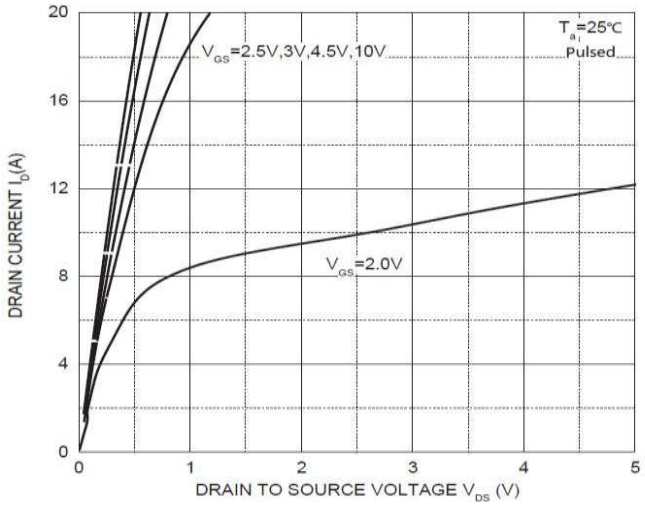
5.Electrical Characteristics（T_A = 25℃ unless otherwise noted）

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}= 0V, I_D= 250μA	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 24V, 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	0.6	0.9	1.4	V
Drain-source On-resistance [3]	$R_{DS(on)}$	V_{GS}= 10V, I_D= 5.8A		18	30	mΩ
		V_{GS}= 4.5V, I_D= 5A		21	35	
		V_{GS}= 2.5V, I_D= 4A		30	45	
Forward transconductance [3]	g_{FS}	V_{DS}= 5V, I_D= 5A	8			S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}= 15V,V_{GS}= 0V,f= 1MHz		1050		pF
Output Capacitance	C_{oss}			99		
Reverse Transfer Capacitance	C_{rss}			77		
Gate resistance	R_g	V_{DS}= 0V,V_{GS}= 0V, f= 1MHz			3.6	Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS}= 10V,V_{GS}= 6V, I_D= 5A		9.5		nC
Gate-source Charge	Q_{gs}			1.5		
Gate-drain Charge	Q_{gd}			3		
Turn-on Delay Time	$t_{d(on)}$	V_{GS}= 10V,V_{DS}= 15V, R_L= 2.7Ω,R_{GEN}= 3Ω			5	ns
Turn-on Rise Time	t_r				7	
Turn-off Delay Time	$t_{d(off)}$				40	
Turn-off Fall Time	t_f				6	
Source - Drain Diode Characteristics						
Diode Forward Voltage [3]	V_{SD}	V_{GS}= 0V, I_S= 1A			1.2	V

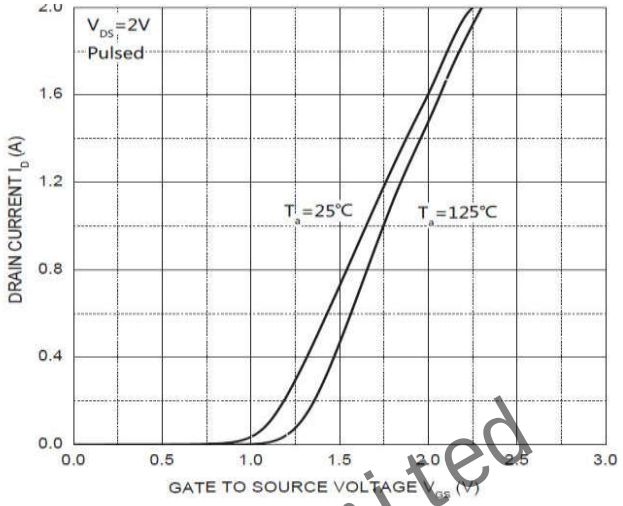
Notes :

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

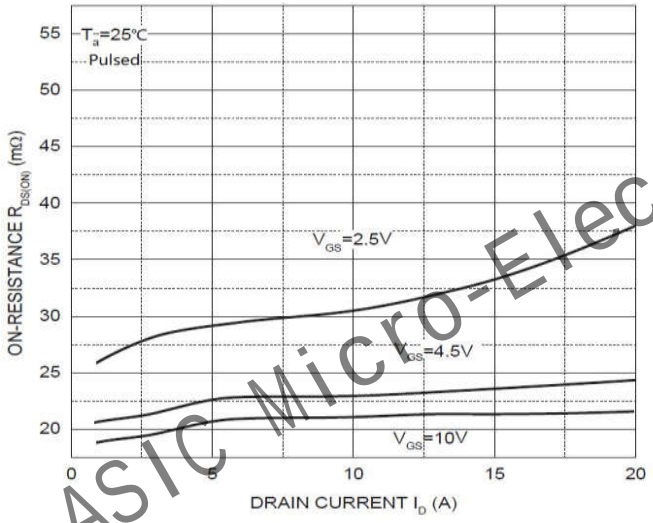
6.Typical Characteristic



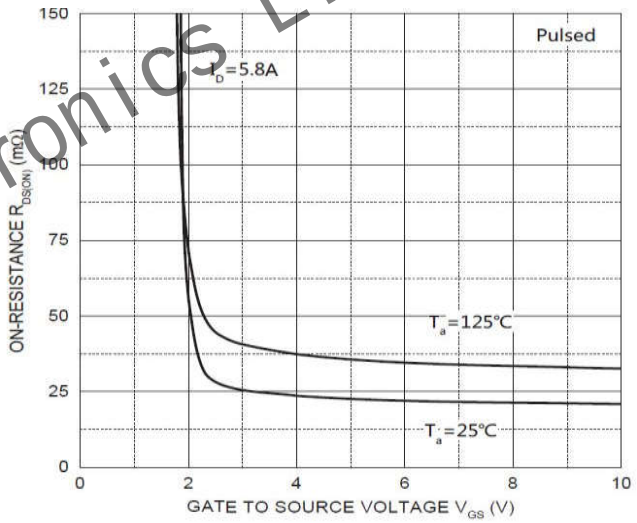
Output Characteristics



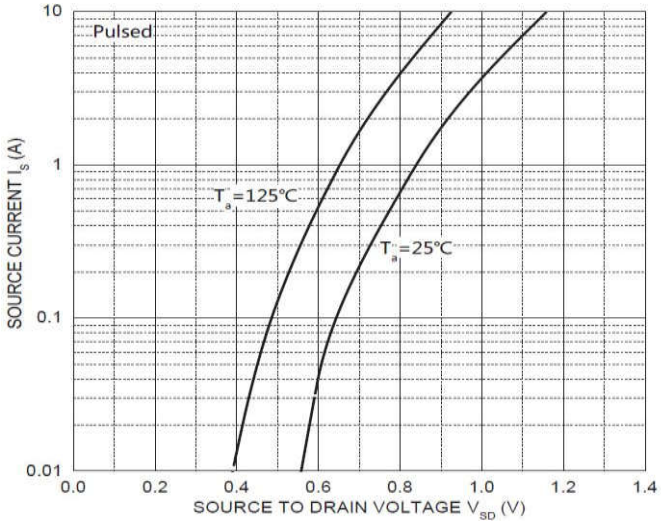
Transfer Characteristics



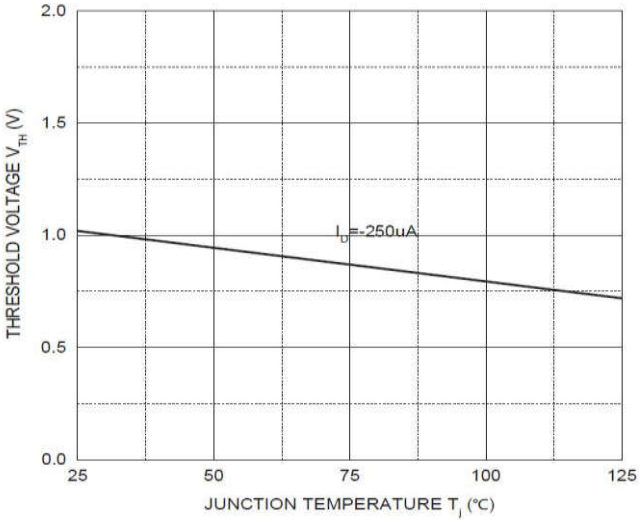
$R_{DS(ON)}$——I_D



$R_{DS(ON)}$——V_{GS}

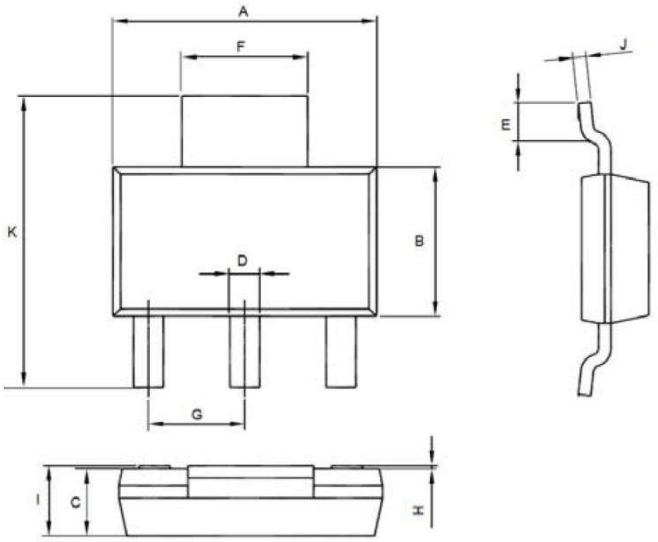


I_S——V_{SD}



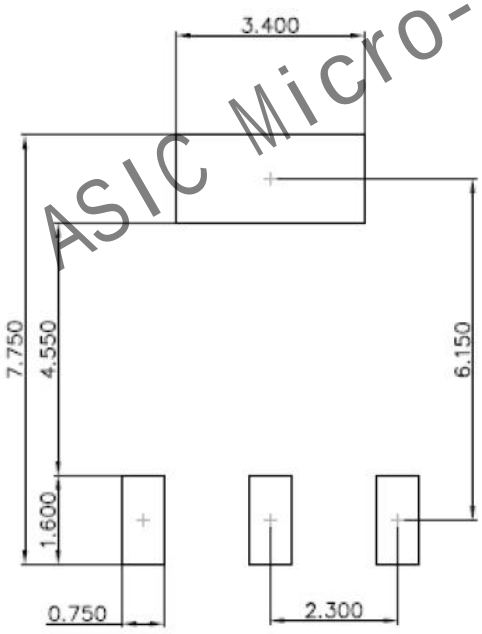
Threshold Voltage

7.Dimension



Symbol	Millimeters	
	Min	Max
A	6.10	6.50
B	3.30	3.70
C	1.50	1.70
D	0.66	0.82
E	0.90	1.15
F	2.90	3.10
G	2.20	2.40
H	0.02	0.10
I	1.52	1.80
J	0.20	0.40
K	6.70	7.30

8.Recommended Land Pattern

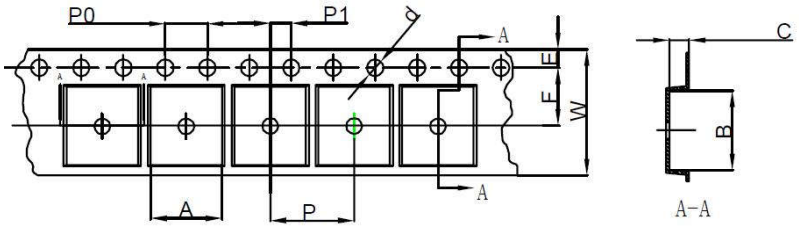


Note:

1. Controlling dimension: in millimeters
2. General tolerance: ±0.05mm
3. The pad layout is for reference only
4. Unit: mm

9.Tape and Reel

SOT-223 Embossed Carrier Tape

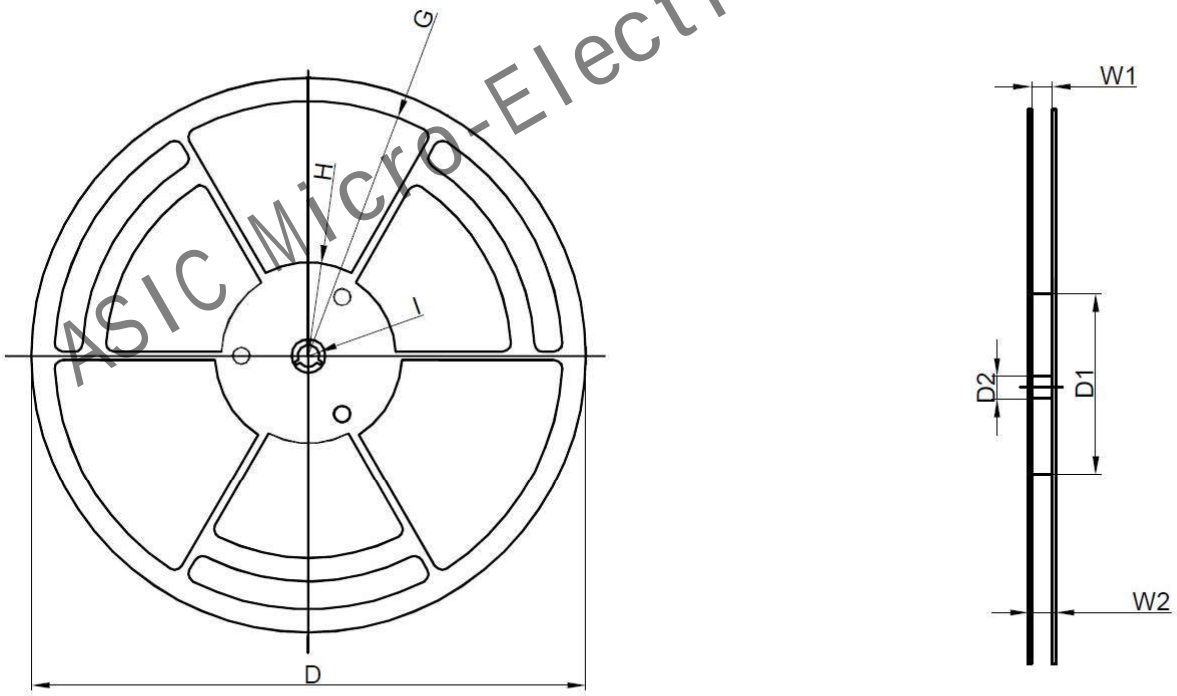


Packaging Description:

SOT-223 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 2,500 units per 13" or 33.0cm 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-223	6.765	7.335	1.88	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

SOT-223 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
13"Dia	Ø330.00	100.00	13.00	R151.00	R56.00	R6.50	12.40	17.60

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
2,500 pcs	13 inch	2,500 pcs	336×336×48	20,000 pcs	445×355×365	

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