HIGH DIODE

2305

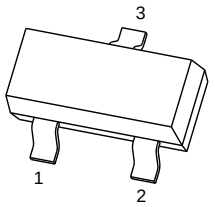
SOT-23 Plastic-Encapsulate MOSFET

12V P-Channel MOSFET

Product Summary

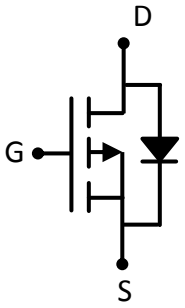
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-12V	30mΩ@-4.5V	-4.1A
	40mΩ@-2.5V	
	60mΩ@-1.8V	

SOT-23



1. GATE
2. SOURCE
3. DRAIN

Schematic diagram



Feature

TrenchFET Power MOSFET

Excellent $R_{DS(on)}$ and Low Gate Charge

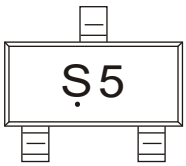
Application

DC/DC Converter

Load Switch for Portable Devices

Battery Switch

MARKING:



S5 = Device code
Solid dot = Green molding compound device.

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-12	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous Drain Current	I_D	-4.1	A
Pulsed Drain Current (t=300μs)	I_{DM}	-15	A
Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

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	-12			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-12V,V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =± 10V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-0.5	-0.65	-0.9	V
Drain-source on-resistance[a]	$R_{DS(on)}$	V_{GS} =-4.5V, I_D =-3.5A		30	45	mΩ
		V_{GS} =-2.5V, I_D =-3.0A		40	60	
		V_{GS} =-1.8V, I_D =-2.0A		60	90	
Forward tranconductance[a]	g_{FS}	V_{DS} =-5V, I_D =-4.1A	6			S
Dynamic characteristics[b,c]						
Input Capacitance	C_{iss}	V_{DS} =-4V,V_{GS} =0V,f =1MHz		740		pF
Output Capacitance	C_{oss}			290		
Reverse Transfer Capacitance	C_{rss}			190		
Gate resistance	R_g	f =1MHz	1.4		14	Ω
Total Gate Charge	Q_g	V_{DS} =-4V,V_{GS} =-2.5V,I_D=-4.1A		4.5	9	nC
Gate-Source Charge	Q_{gs}			1.2		
Gate-Drain Charge	Q_{gd}			1.6		
Turn-on delay time	$t_{d(on)}$	V_{DD}=-4V,V_{GEN}=-4.5V,I_D=-3.3A R_L=1.2Ω,R_{GEN}=1Ω		13	20	ns
Turn-on rise time	t_r			35	53	
Turn-off delay time	$t_{d(off)}$			32	48	
Turn-off fall time	t_f			10	20	
Turn-on delay time	$t_{d(on)}$	V_{DD}=-4V,V_{GEN}=-8V,I_D=-3.3A R_L=6Ω,R_{GEN}=1Ω		5	10	
Turn-on rise time	t_r			11	17	
Turn-off delay time	$t_{d(off)}$			22	33	
Turn-off fall time	t_f			16	24	
Source-Drain Diode characteristics						
Diode forward current	I_S	T_C=25℃			-1.4	A
Diode pulsed forward current[a]	I_{SM}				-10	A
Diode Forward voltage	V_{DS}	V_{GS} =0V, I_S=-3.3A			-1.2	V

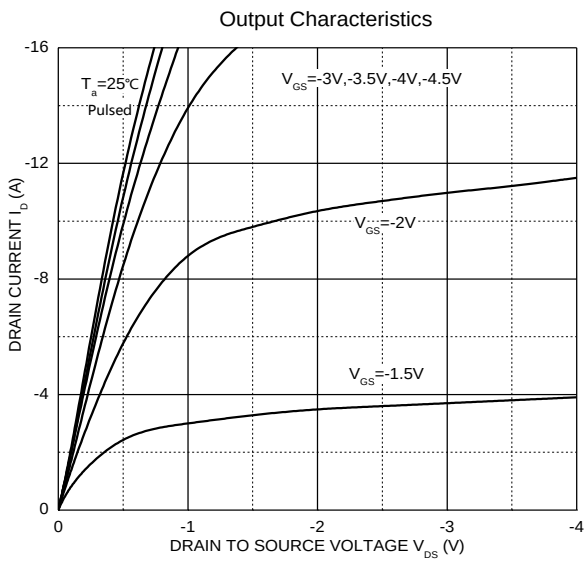
Note :

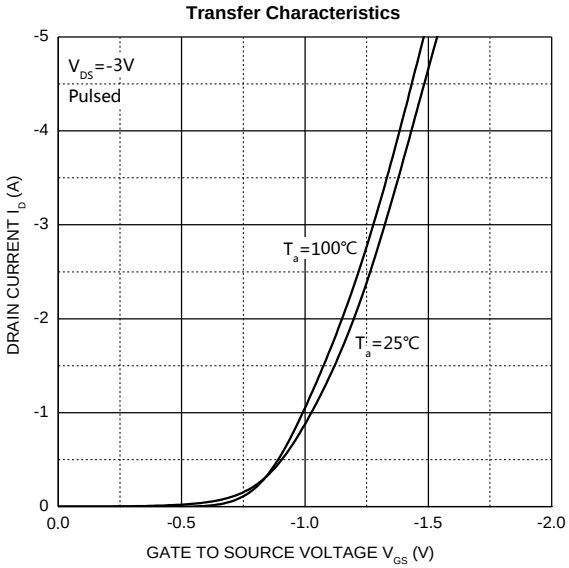
a. Pulse Test ; Pulse Width ≤300μs, Duty Cycle ≤2%.

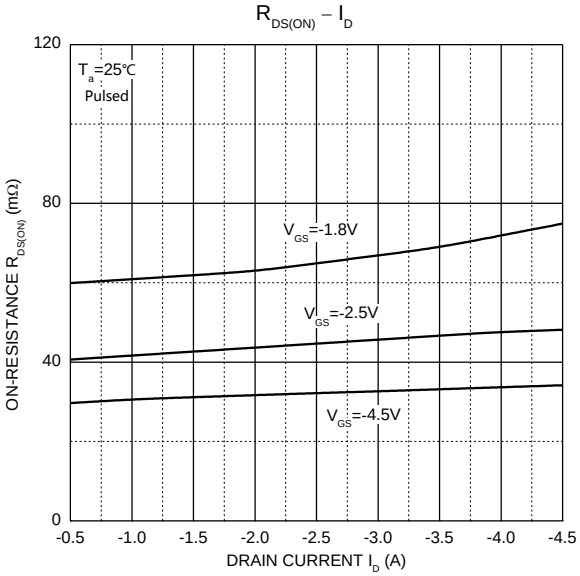
b. Guaranteed by design, not subject to production testing.

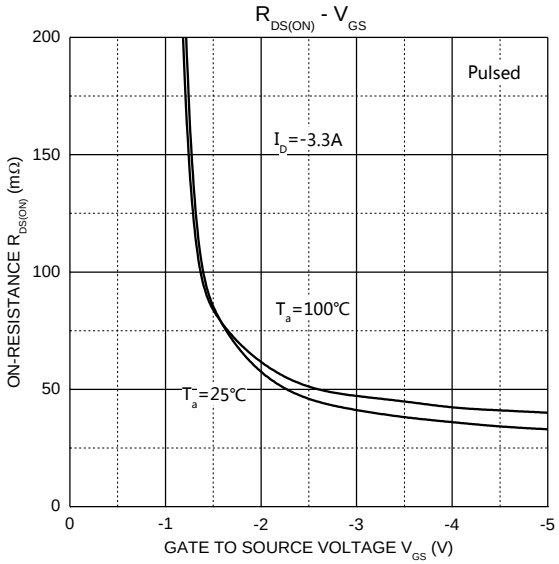
c. These parameters have no way to verify.

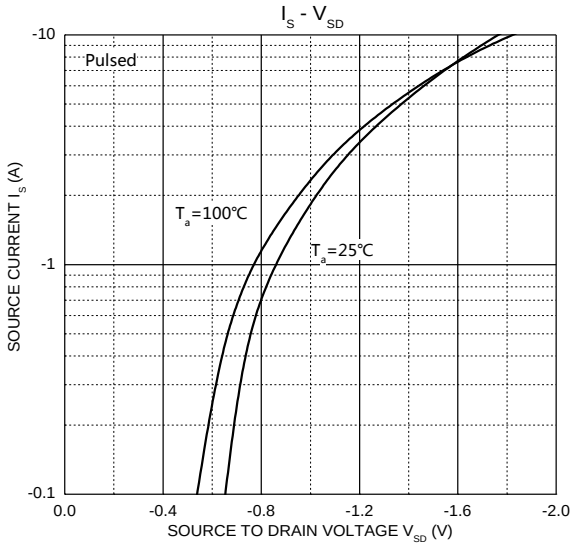
Typical Characteristics

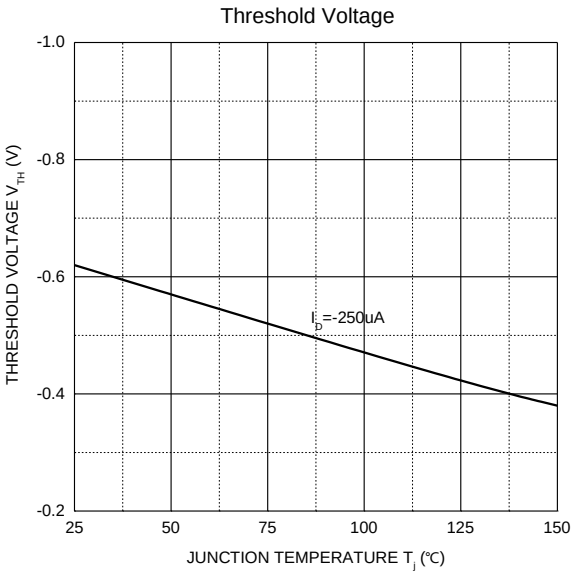




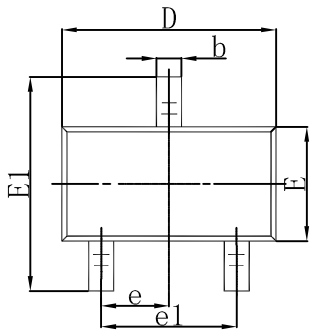


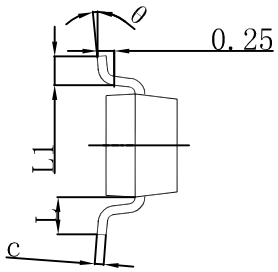


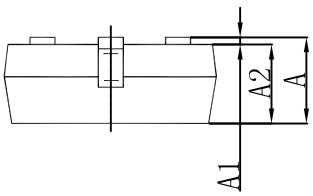




SOT-23 Package Outline Dimensions

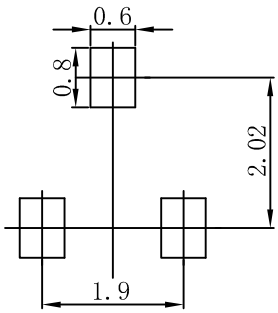






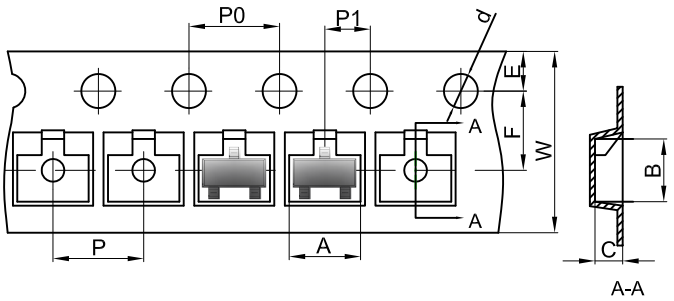
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 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°

SOT-23 Suggested Pad Layout



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

SOT-23 Embossed Carrier Tape

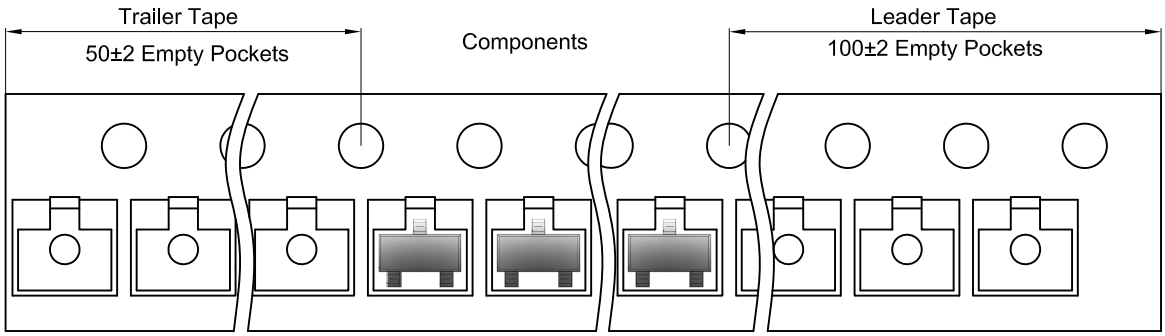


Packaging Description:

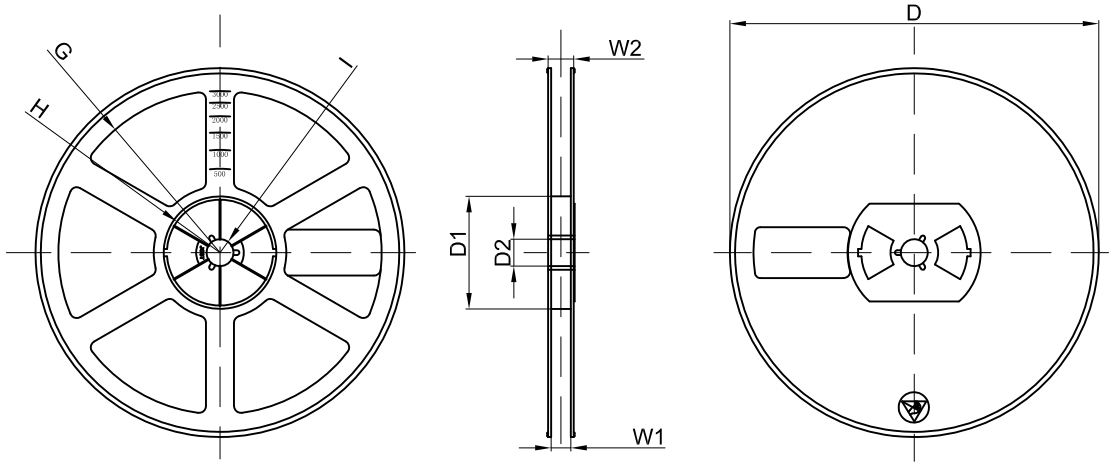
SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in 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	45,000 pcs	203×203×195	180,000 pcs	438×438×230	