

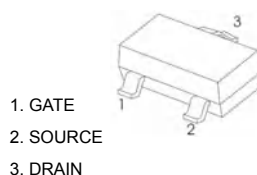
FEATURES

- High density cell design for low $R_{DS(ON)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability

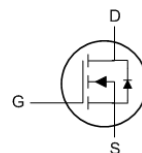
V_{DSS} 30 V
 I_D 3.16 A
 $R_{DS(ON)}$ 38 m Ω

A6SHB

SOT-23



Equivalent Circuit



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Maximum Ratings and Thermal Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-source Voltage	V_{GS}	± 20	V
Drain Current (Continuous)	I_D	3.16	A
Drain Current (Pulsed) ^a	I_{DM}	10	A
Total Power Dissipation @ $T_A=25^\circ\text{C}$	P_D	0.75	W
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-55 to +150	$^\circ\text{C}$
Thermal Resistance Junction to Ambient (PCB mounted)	$R_{\theta JA}$	100	$^\circ\text{C/W}$

Electrical Characteristics (TA=25°C, unless otherwise noted)

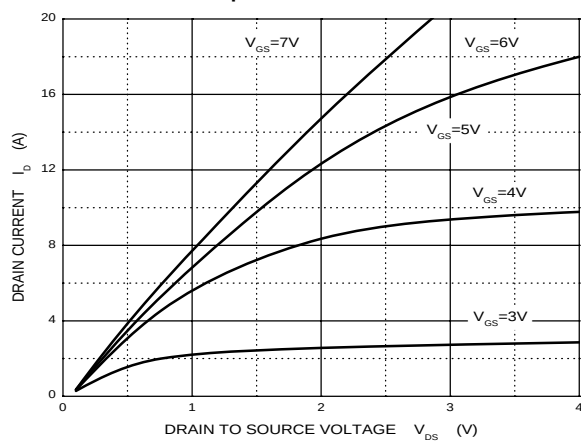
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DS}	V _{GS} = 0V, I _D =250μA	30			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0		3.0	
Gate-Body Leakage	I _{GSS}	V _{DS} =0V, V _{GS} = ± 20V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			0.5	μA
Drain-Source On-Resistance ^a	R _{DS(on)}	V _{GS} =10V, I _D =3.5A		0.038	0.047	Ω
		V _{GS} =4.5V, I _D =2.8A		0.052	0.065	
Forward Transconductance ^a	g _{fs}	V _{DS} =4.5V, I _D =2.5A		7.0		S
Diode Forward Voltage	V _{SD}	I _S =1.25A,V _{GS} =0V		0.8	1.2	V
Dynamic						
Gate Charge	Q _g	V _{DS} =15V,V _{GS} =5V,I _D =2.5A		3.0	4.5	nC
Total Gate Charge	Q _{gt}	V _{DS} =15V,V _{GS} =10V,I _D =2.5A		6	9	
Gate-Source Charge	Q _{gs}			1.6		
Gate-Drain Charge	Q _{gd}			0.6		
Gate Resistance	R _g	f =1.0MHz	2.5	5	7.5	Ω
Input Capacitance	C _{iss}	V _{DS} =15V,V _{GS} =0V,f =1MHz		305		pF
Output Capacitance	C _{oss}			65		
Reverse Transfer Capacitance	C _{rss}			29		
Switching						
Turn-On Delay Time	t _{d(on)}	V _{DD} =15V, R _L =15Ω, I _D ≈1A, V _{GEN} =10V,R _g =6Ω		7	11	ns
Rise Time	t _r			12	18	
Turn-Off Delay Time	t _{d(off)}			14	25	
Fall Time	t _f			6	10	

Notes :

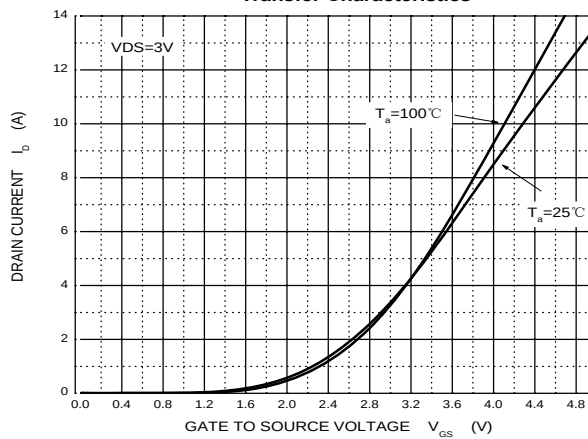
a.Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.

RATING AND CHARACTERISTIC CURVES

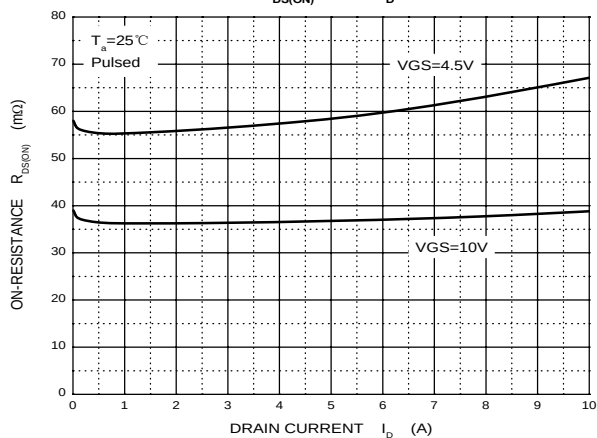
Output Characteristics



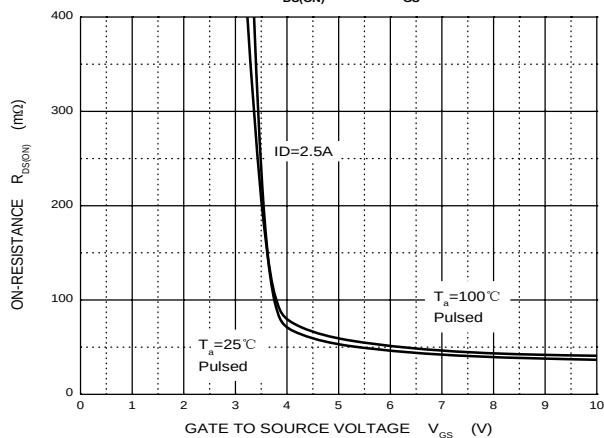
Transfer Characteristics



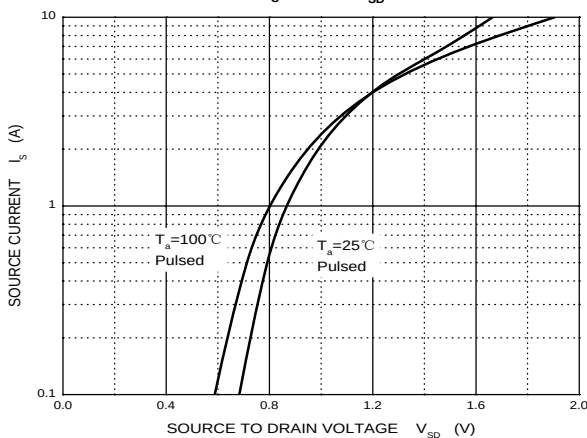
$R_{DS(ON)}$ — I_D



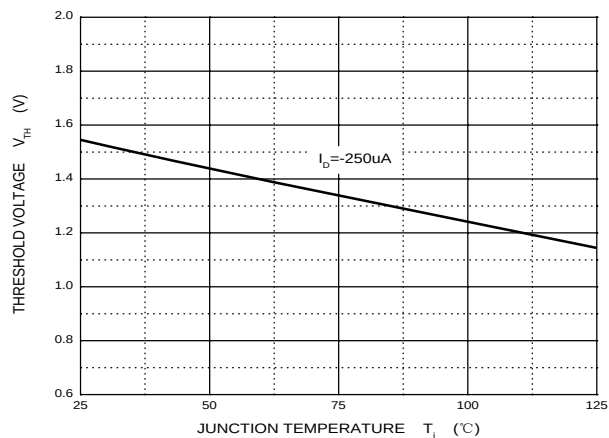
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}

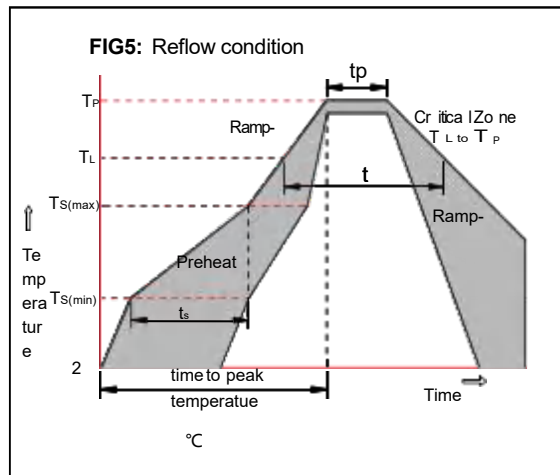


Threshold Voltage



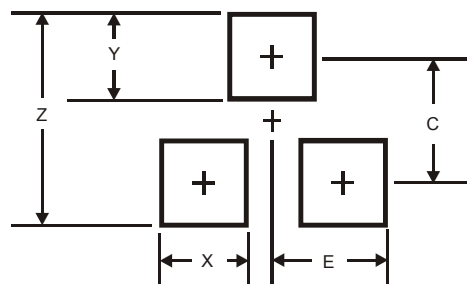
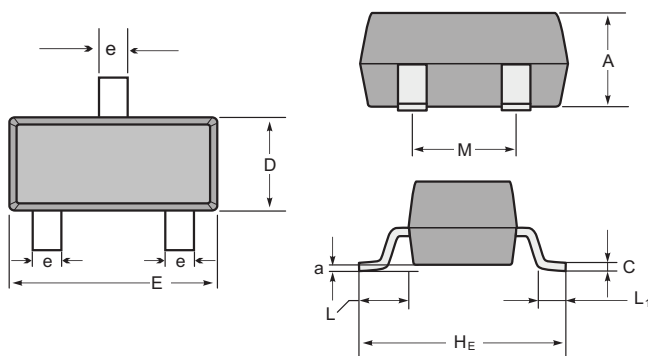
Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_P)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C



Package Dimensions & Suggested Pad Layout

SOT23

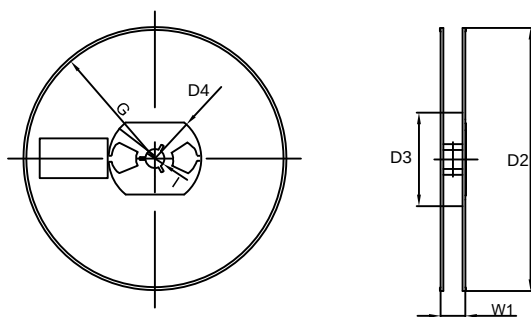


SOT-23 mechanical data

UNIT		A	C	D	E	H _E	e	M	L	L ₁	a
mm	max	1.1	0.15	1.4	3.0	2.6	0.5	1.95	0.55 (ref)	0.36 (ref)	0.0
	min	0.9	0.08	1.2	2.8	2.2	0.3	1.7			0.15
mil	max	43	6	55	118	102	20	77	22 (ref)	14 (ref)	0.0
	min	35	3	47	110	87	12	67			6

Dimensions	SOT23
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

Tape



Symbol	Dimension (mm)
P0	4.00±0.10
P1	4.00±0.10
P2	2.00±0.10
D0	1.55±0.10
D1	1.05±0.10
E	1.55±0.10
F	3.60±0.10
W	8.00±0.10
A0	3.80±0.20
B0	3.25±0.20
K0	1.45±0.10
T	0.25±0.05
D2	178.0±3.0
D3	55Min.
D4	R24.0±3.0
G	R82.0±3.0
I	13.0±2.0
W1	11.0±3.0

Quantity: 3000PCS