

FEATURES

$V_{DS}=100V, I_D=0.17A$

High-density cell design for low $R_{DS(on)}$

Voltage-controlled small signal switch

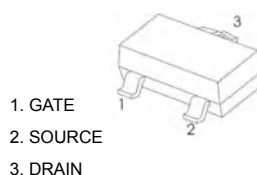
Rugged and reliable

ESD rating: 2000V HBM

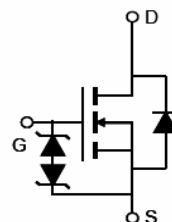
V_{DS} 100 V
 I_D 0.17 A
 $R_{DS(ON)}$ 3.8 Ω

SAW

SOT-23



Equivalent Circuit



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
N-MOSFET			
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current (note 1)	I_D	0.17	A
Pulsed Drain Current ($t_p=10\mu\text{s}$)	I_{DM}	0.68	A
Continuous Source-Drain Diode Current	I_S	0.17	A
Power Dissipation	P_D	1.0	W
Thermal Resistance from Junction to Ambient (note 1)	$R_{\theta JA}$	100	$^\circ\text{C/W}$
Operation Junction and Storage Temperature Range	T_J, T_{STG}	$-55 \sim +150$	$^\circ\text{C}$
Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	T_L	260	$^\circ\text{C}$

$T_a = 25^\circ\text{C}$ unless otherwise specified

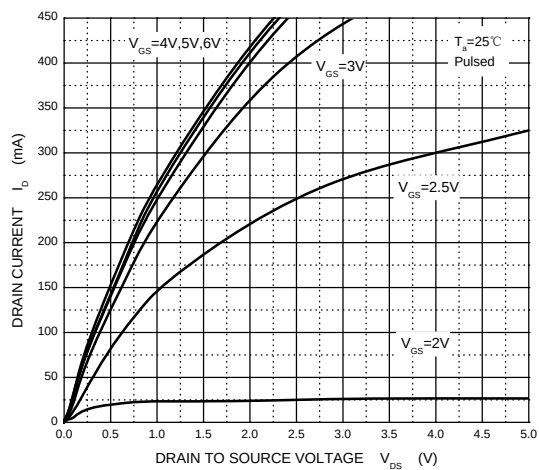
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERISTICS						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	100			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =100V,V _{GS} = 0V			1	μA
		V _{DS} =20V,V _{GS} = 0V			5	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0V			±10	μA
Gate threshold voltage (note 2)	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.6	2.5	V
Drain-source on-resistance(note 2)	R _{DS(on)}	V _{GS} =4.5V, I _D =0.17A		3.8	10	Ω
		V _{GS} =10V, I _D =0.17A		3.5	6	Ω
Forward tranconductance(note 2)	g _{FS}	V _{DS} =10V, I _D =170mA	80			mS
Diode forward voltage	V _{SD}	I _S =340mA, V _{GS} = 0V			1.3	V
DYNAMIC CHARACTERISTICS (note 4)						
Input Capacitance	C _{iss}	V _{DS} =25V,V _{GS} =0V,f =1MHz		29	60	pF
Output Capacitance	C _{oss}			10	15	pF
Reverse Transfer Capacitance	C _{rss}			2	6	pF
SWITCHING CHARACTERISTICS (note 3,4)						
Turn-on delay time	t _{d(on)}	V _{GS} =10V,V _{DD} =30V, I _D =0.28A,R _{GEN} =50 Ω			8	ns
Turn-on rise time	t _r				8	ns
Turn-off delay time	t _{d(off)}				13	ns
Turn-off fall time	t _f				16	ns
Total Gate Charge	Q _g	V _{DS} =10V,I _D =0.22A, V _{GS} =10V		1.4	2	nC
Gate-Source Charge	Q _{gs}			0.15	0.25	nC
Gate-Drain Charge	Q _{gd}			0.2	0.4	nC

Notes :

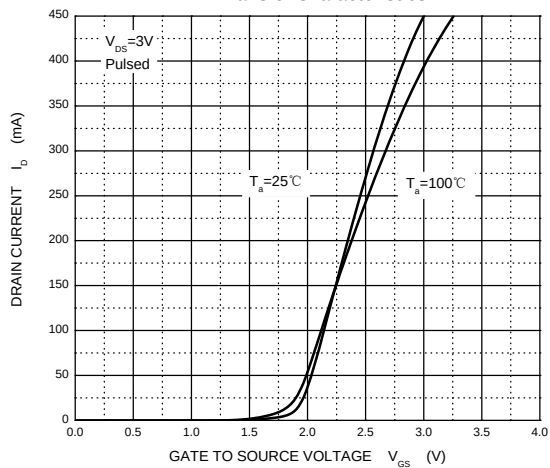
1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test : Pulse width=300 μs , duty cycle $\leq 2\%$.
3. Switching characteristics are independent of operating junction temperature.
4. Granted by design, not subject to producing.

RATING AND CHARACTERISTIC CURVES

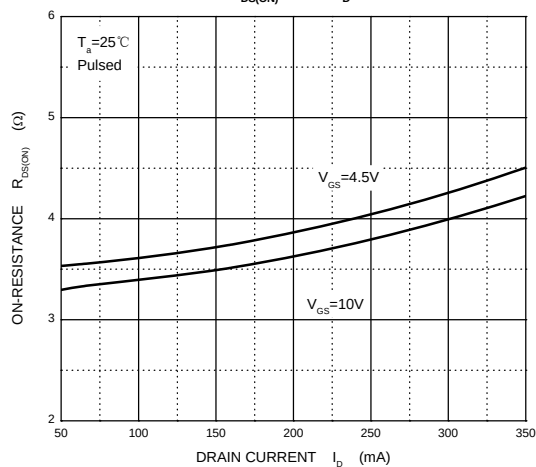
Output Characteristics



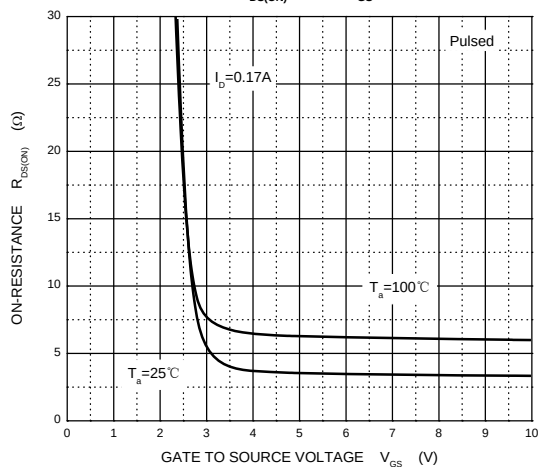
Transfer Characteristics



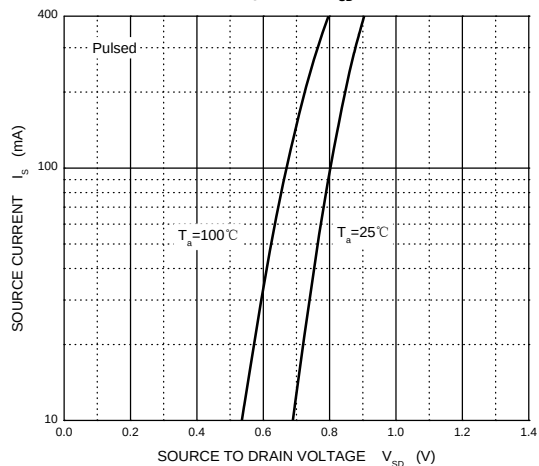
$R_{DS(ON)}$ — I_D



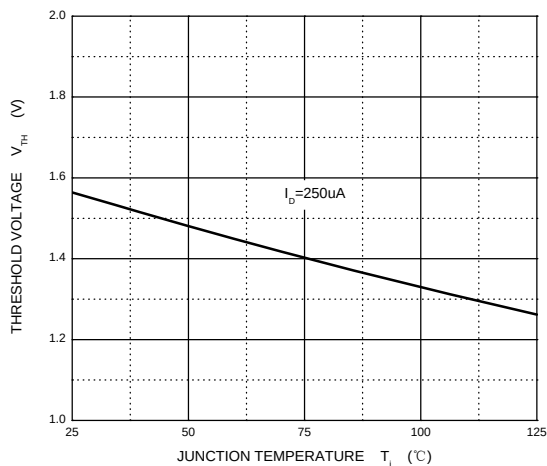
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}

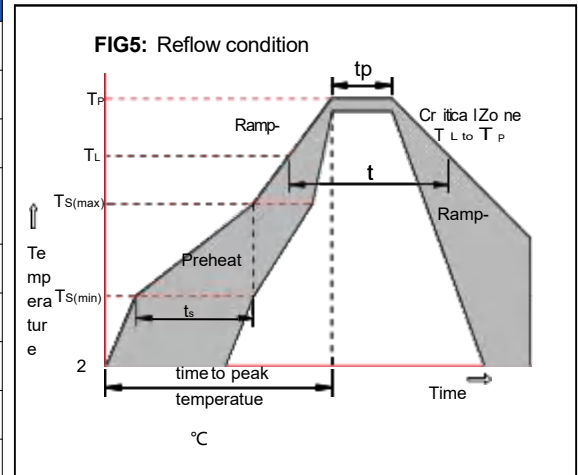


Threshold Voltage



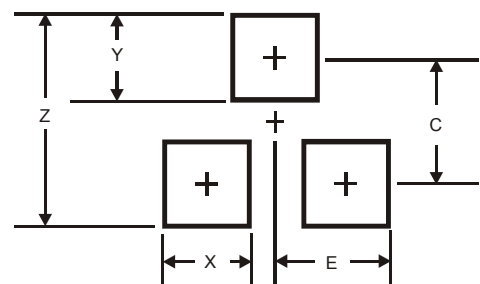
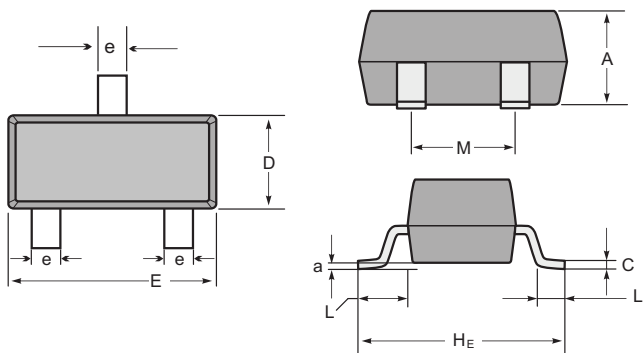
Soldering parameters

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



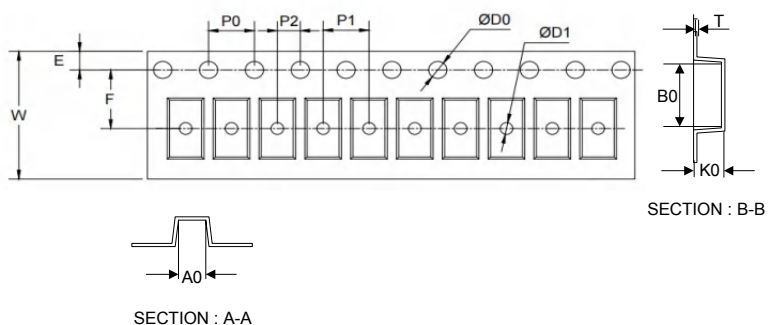
SOT-23 mechanical data

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)
	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)
	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 & reel specification

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	

7" Reel

