

FEATURES

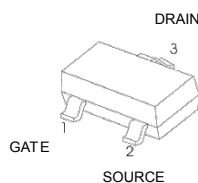
Surface Mount Package
High Density Cell Design for Extremely Low $R_{DS(ON)}$
Voltage Controlled Small Signal Switch
Rugged and Reliable

APPLICATION

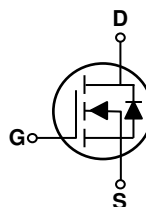
Small Servo Motor Controls
Power MOSFET Gate Drivers
Switching Application

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

K23



SOT-323



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

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 ($t_p=10\mu s$)	I_{DM}	0.68	A
Continuous Source-Drain Diode Current	I_S	0.17	A
Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient (note 1)	$R_{\theta JA}$	357	$^{\circ}C/W$
Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~+150	$^{\circ}C$
Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	T_L	260	$^{\circ}C$

Electrical Characteristics

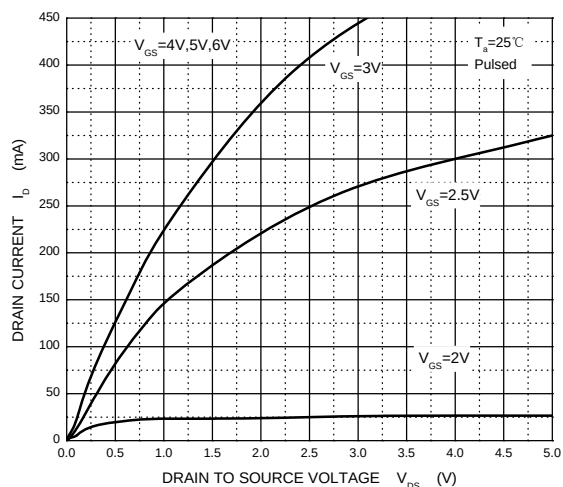
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERISTICS						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	100			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =100V,V _{GS} = 0V			1	μA
		V _{DS} =20V,V _{GS} = 0V			10	nA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0V			±50	nA
Gate threshold voltage (note 2)	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.6	2.8	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 =2.8A,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 :

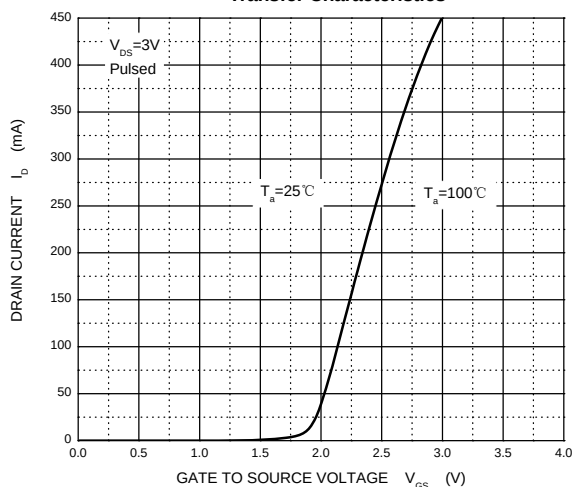
- 1.Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test : Pulse width=300 μs , duty cycle $\leq 2\%$.
3. Switching characteristics are independent of operating junction temperature.
4. Garanted by design, not subject to producing.

RATING AND CHARACTERISTIC CURVES

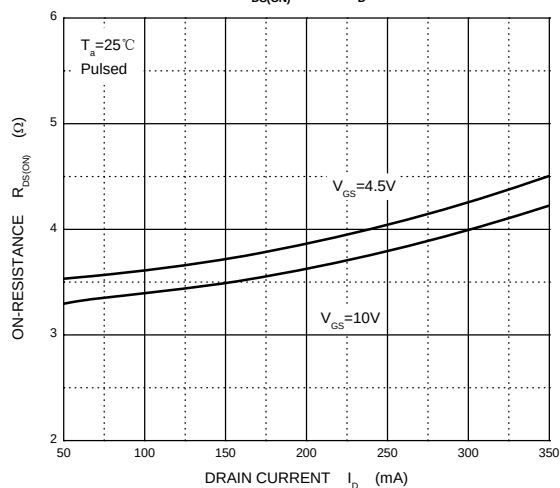
Output Characteristics



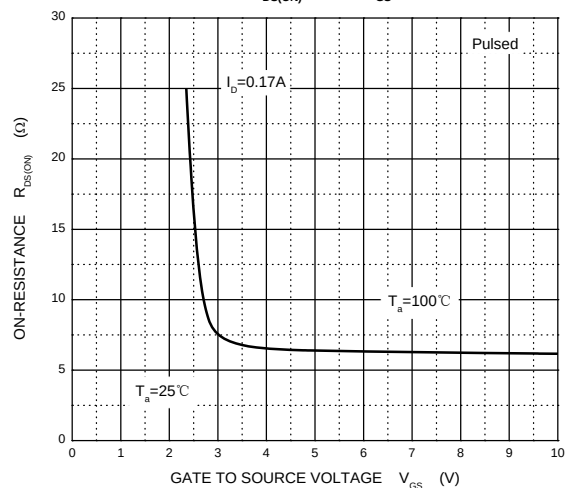
Transfer Characteristics



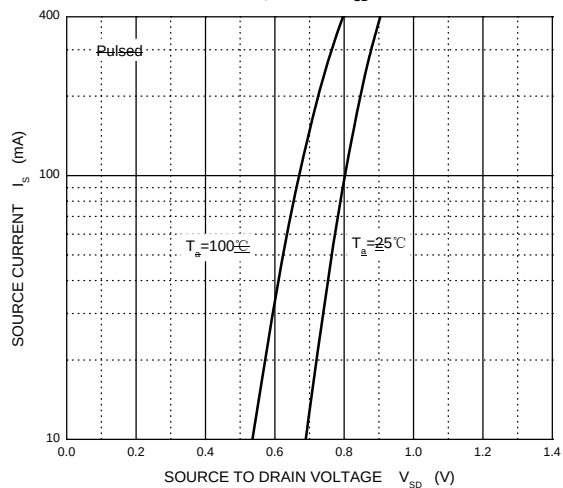
$R_{DS(ON)}$ — I_D



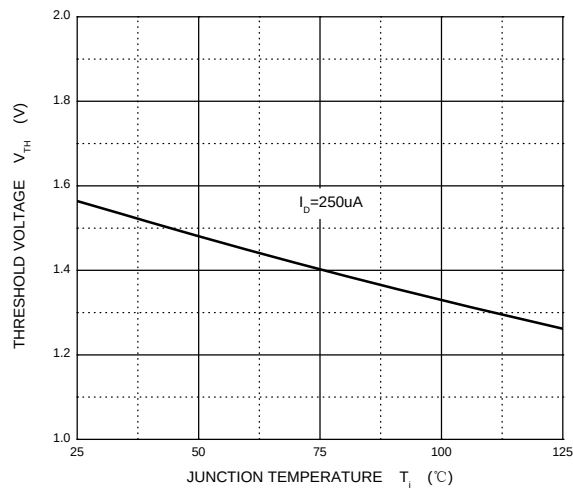
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}

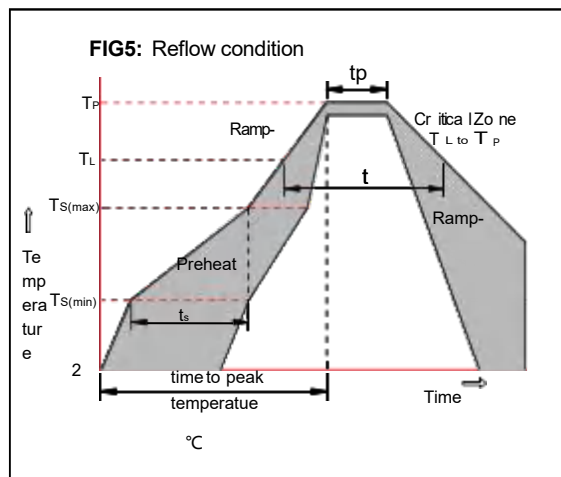


Threshold Voltage



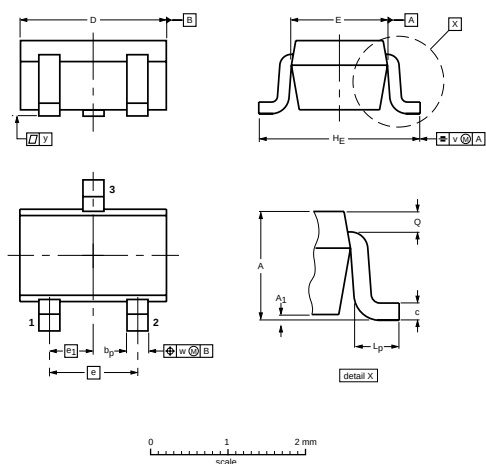
Soldering parameters

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



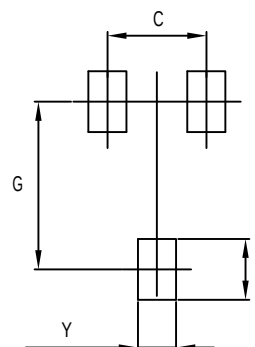
Package Dimensions & Suggested Pad Layout

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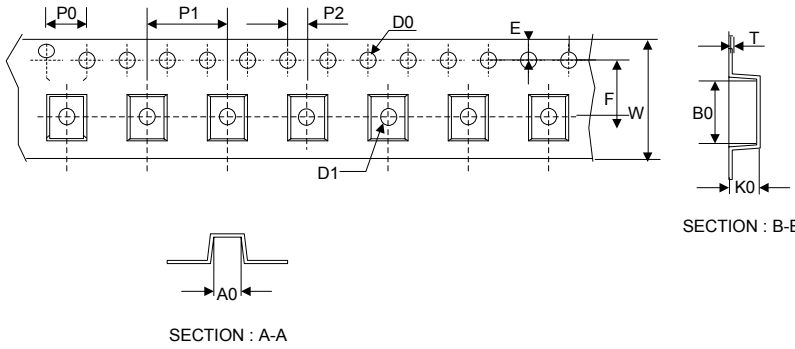
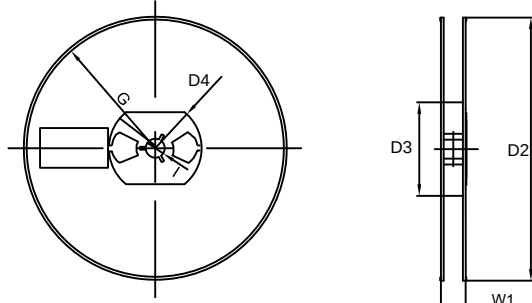
DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max	b _p	c	D	E	e	e ₁	H _E	L _p	Q	v	w
mm	1.1 0.8	0.1	0.4 0.3	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.23 0.13	0.2	0.2



Dimensions	Value (in mm)
C	1.30
G	2.00
X	0.90
Y	0.65

Tape & reel specification

Tape		Symbol	Dimension (mm)
 SECTION : A-A SECTION : B-B		P0	4.00±0.20
		P1	4.00±0.20
		P2	2.00±0.20
		D0	1.55±0.20
		D1	1.00±0.20
		E	1.55±0.25
		F	3.60±0.20
		W	8.00±0.20
		A0	2.50±0.20
		B0	2.60±0.20
		K0	1.40±0.20
		T	0.20±0.20
		D2	177.0±5.0
		D3	55Min.
7" Reel		D4	R24.6±2.0
		G	R82.0±2.0
		I	13.0±2.0
		W1	10.20±3.0
		Quantity: 3000PCS	