

Features

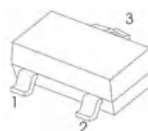
High density cell design for low $R_{DS(ON)}$
Voltage controlled small signal switch
Rugged and reliable
High saturation current capability
ESD Protection

V_{DSS} 50 V
 I_D 300 mA
 $R_{DS(ON)}$ 1.7 Ω

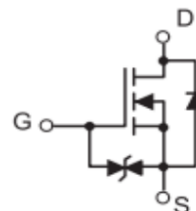
SS

SOT-23

1. GATE
2. SOURCE
3. DRAIN



Equivalent Circuit



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	50	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	300	mA
Power Dissipation	P_D	0.225	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	556	$^{\circ}\text{C/W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-50 ~ +150	

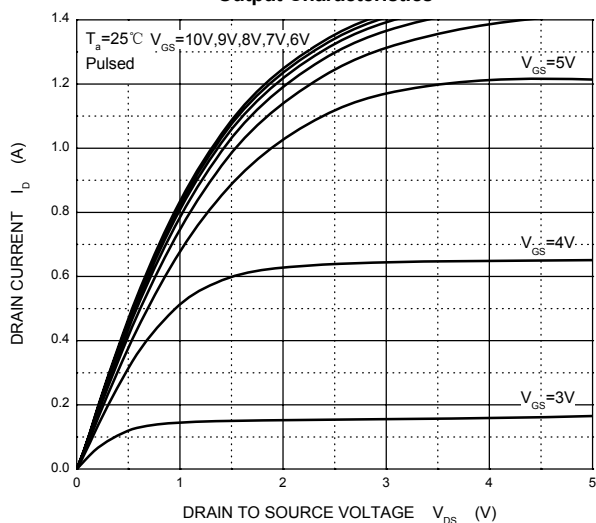
Electrical Characteristics ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0\text{ V}$, $I_D=250\text{ }\mu\text{A}$	50			V
Gate-Threshold Voltage	$V_{th(GS)}$	$V_{DS}=V_{GS}$, $I_D=250\text{ }\mu\text{A}$	0.5		1.5	
Gate-body Leakage	I_{GSS}	$V_{DS}=0\text{ V}$, $V_{GS}=\pm 20\text{ V}$			± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60\text{ V}$, $V_{GS}=0\text{ V}$			1	μA
On-state Drain Current	$I_{D(ON)}$	$V_{GS}=10\text{ V}$, $V_{DS}=7\text{ V}$	500			mA
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{ V}$, $I_D=300\text{mA}$		1.8	3	Ω
		$V_{GS}=4.5\text{V}$, $I_D=200\text{mA}$		2	4	
Forward Trans conductance	g_{fs}	$V_{DS}=10\text{ V}$, $I_D=200\text{mA}$	80			ms
Drain-source on-voltage	$V_{DS(on)}$	$V_{GS}=10\text{V}$, $I_D=500\text{mA}$			3.75	V
		$V_{GS}=5\text{V}$, $I_D=50\text{mA}$			0.375	V
Diode Forward Voltage	V_{SD}	$I_S=100\text{mA}$, $V_{GS}=0\text{ V}$	0.55		1.2	V
Input Capacitance *	C_{iss}	$V_{DS}=25\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$			50	pF
Output Capacitance *	C_{oss}				25	
Reverse Transfer Capacitance *	C_{rss}				5	
SWITCHING TIME						
Turn-on Time *	$t_{d(on)}$	$V_{DD}=25\text{ V}$, $R_L=50\Omega$, $I_D=500\text{mA}$, $V_{GEN}=10\text{ V}$ $R_G=25\Omega$			20	ns
Turn-off Time *	$t_{d(off)}$				40	

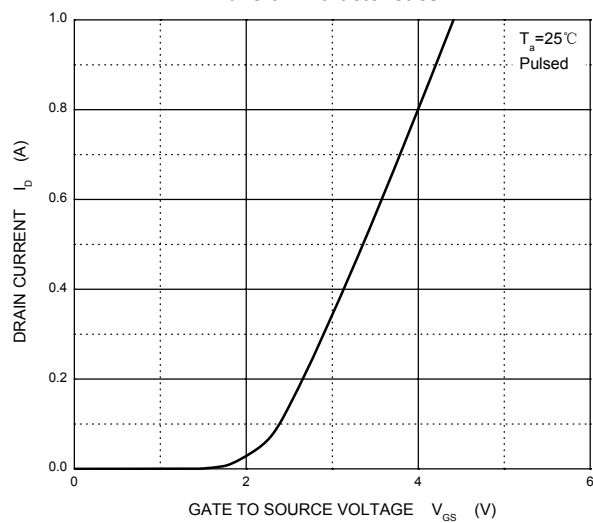
*These parameters have no way to verify.

RATING AND CHARACTERISTIC CURVES

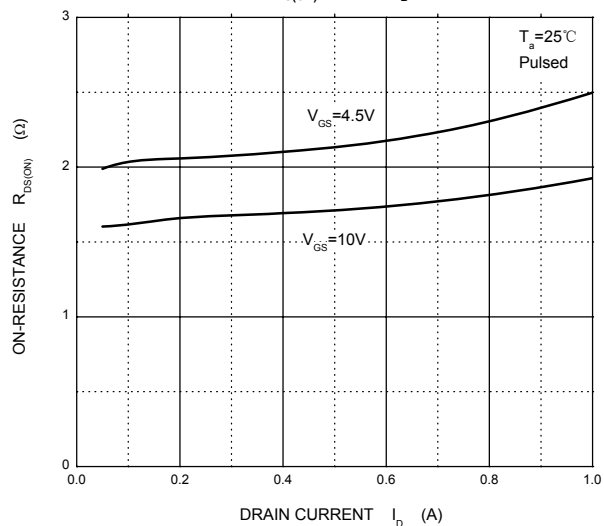
Output Characteristics



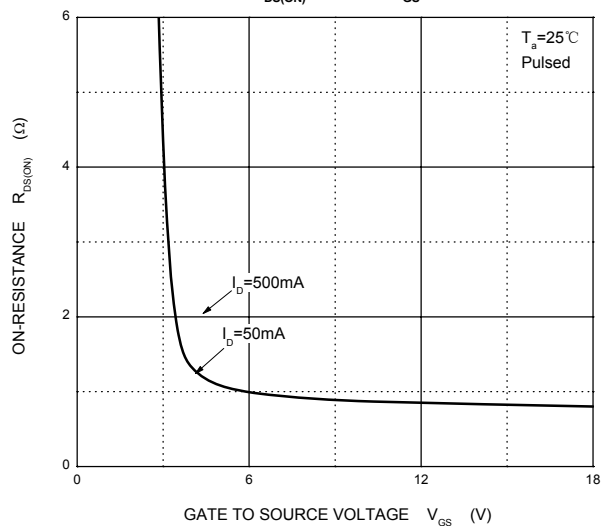
Transfer Characteristics



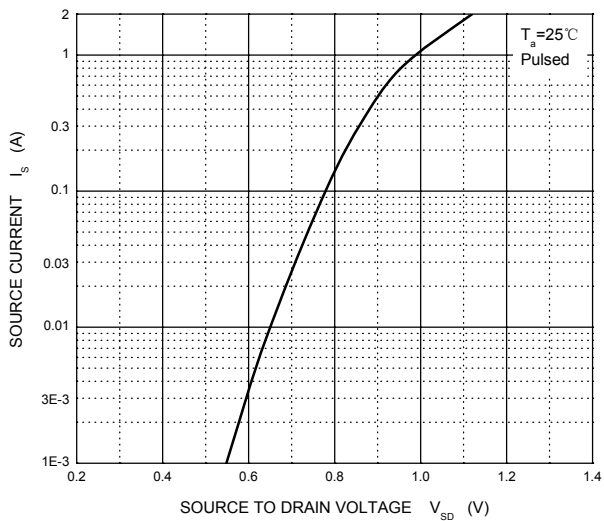
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}

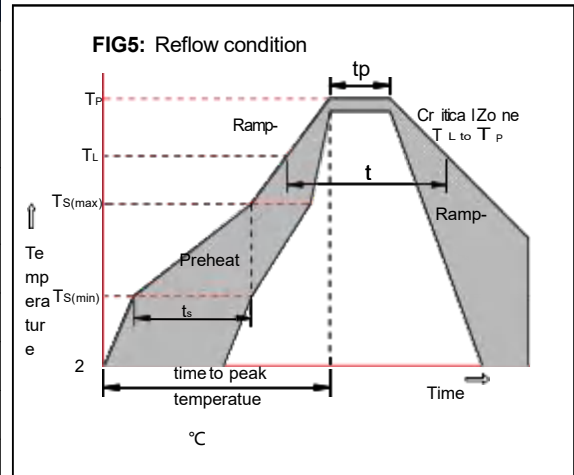


I_S — V_{SD}



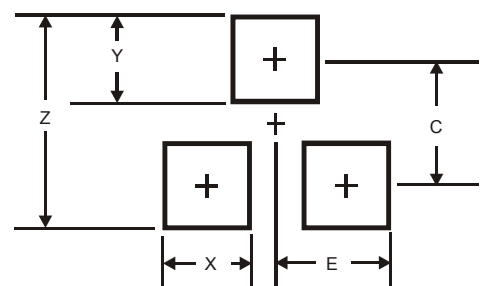
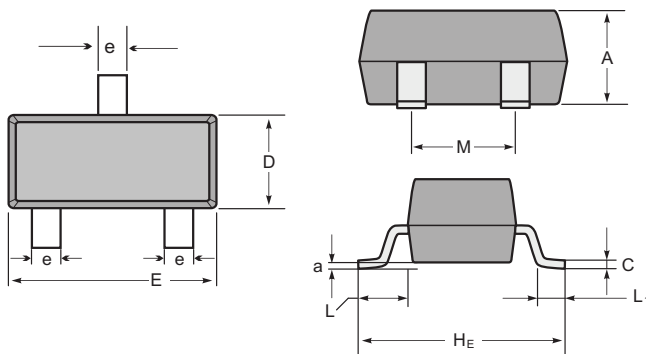
Soldering parameters

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 & reel specification

Tape

Technical drawing of a tape component. The top view shows a series of rectangular components with circular features. Dimensions include: $P0$, $P2$, $P1$ (pitch dimensions); $\varnothing D0$, $\varnothing D1$ (diameters); E , F , W (widths); $A0$ (width of the central feature). The cross-section view, labeled 'SECTION : B-B', shows the profile of the tape with dimensions T (thickness), $B0$ (height), and $K0$ (width of the base). The cross-section view, labeled 'SECTION : A-A', shows the profile of the central feature with dimension $A0$.

7" Reel

Technical drawing of a 7-inch reel. The top view shows a circular reel with a central hub and a rectangular component. Dimensions include: $D4$ (diameter of the reel), G (radius of the central hub), $D3$ (diameter of the central hub), $D2$ (diameter of the central hub), and $W1$ (width of the central hub). The side view shows the profile of the reel with dimensions $D3$ and $D2$.

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