

FEATURES

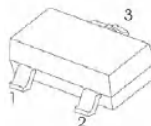
- * High density cell design for low $R_{DS(ON)}$
- * Voltage controlled small signal switch
- * Rugged and reliable
- * High saturation current capability

V_{DSS} 60 V
 I_D 340 mA
 $R_{DS(ON)}$ 1.7 Ω

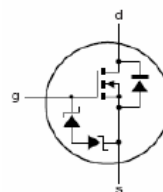
7002

SOT-23

1. GATE
2. SOURCE
3. DRAIN



Equivalent Circuit



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

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

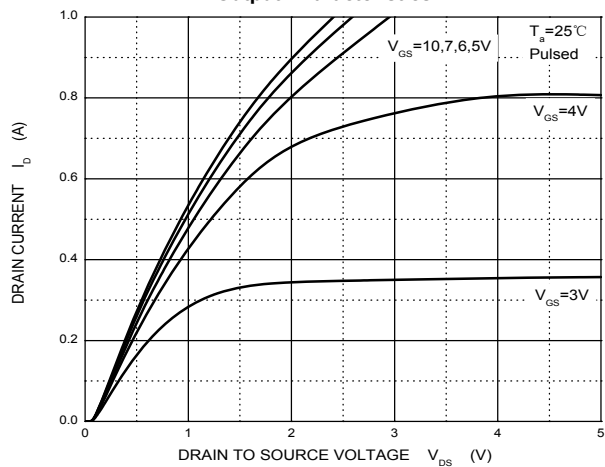
Symbol	Parameter	Value	Units
V_{DS}	Drain-Source voltage	60	V
V_{GS}	Gate-Source voltage	20	V
I_D	Drain Current	340	mA
P_D	Power Dissipation	0.35	W
T_J	Junction Temperature	150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature	-55-150	$^{\circ}\text{C}$
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	357	$^{\circ}\text{C/W}$

Electrical Characteristics

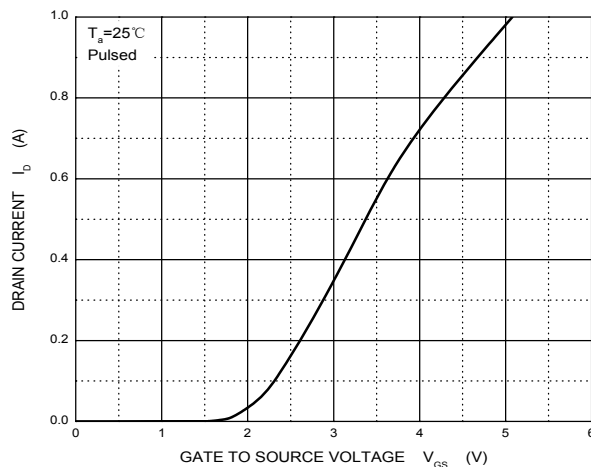
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Static Characteristics						
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0V, I _D =250μA	60			V
Gate Threshold Voltage*	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1		2.5	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =48V, V _{GS} = 0V			1	μA
Gate –Source leakage current	I _{GSS1}	V _{GS} =±20V, V _{DS} = 0V			±10	μA
	I _{GSS2}	V _{GS} =±10V, V _{DS} = 0V			±200	nA
	I _{GSS3}	V _{GS} =±5V, V _{DS} = 0V			±100	nA
Drain-Source On-Resistance*	R _{DS(on)}	V _{GS} = 4.5V, I _D =200mA			5.0	Ω
		V _{GS} =10V, I _D =300mA		1.7	4.0	Ω
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =300mA			1.5	V
Recovered charge	Q _r	V _{GS} =0V, I _S =300mA, V _R =25V, dI _S /dI _t =-100A/μS		30		nC
Dynamic Characteristics**						
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f =1MHz			40	pF
Output Capacitance	C _{oss}				30	pF
Reverse Transfer Capacitance	C _{rss}				10	pF
Switching Characteristics**						
Turn-On Delay Time	t _{d(on)}	V _{GS} =10V, V _{DD} =50V, R _G =50Ω, R _{GS} =50Ω, R _L =250Ω			10	ns
Turn-Off Delay Time	t _{d(off)}				15	ns
Reverse recovery Time	t _{rr}	V _{GS} =0V, I _S =300mA, V _R =25V, dI _S /dI _t =-100A/μS		30		ns
GATE-SOURCE ZENER DIODE						
Gate-Source Breakdown Voltage	BV _{GSO}	I _{gs} =±1mA (Open Drain)	±21.5		±30	V

RATING AND CHARACTERISTIC CURVES

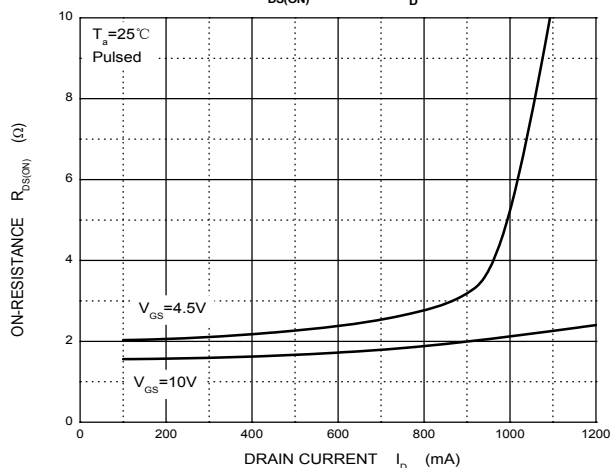
Output Characteristics



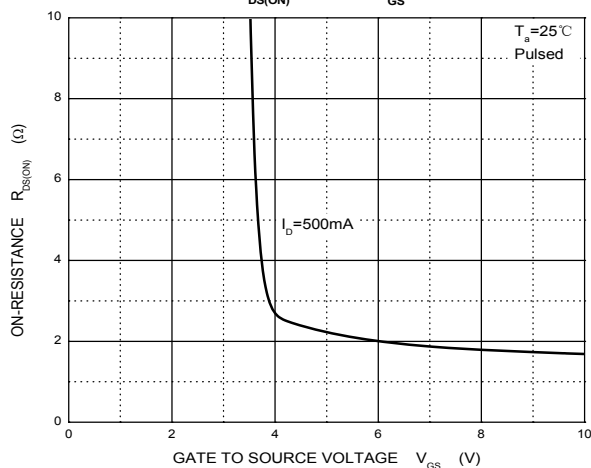
Transfer Characteristics



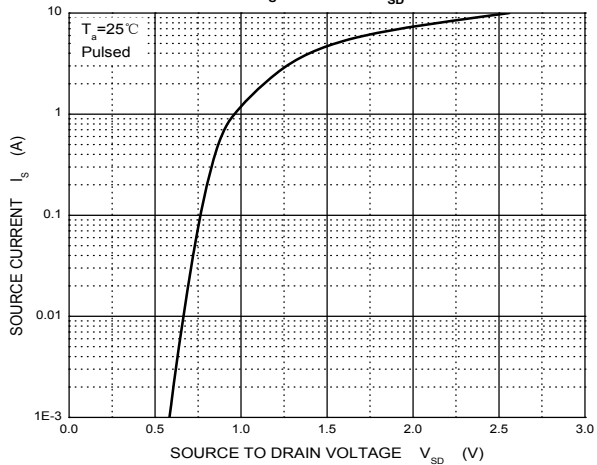
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}

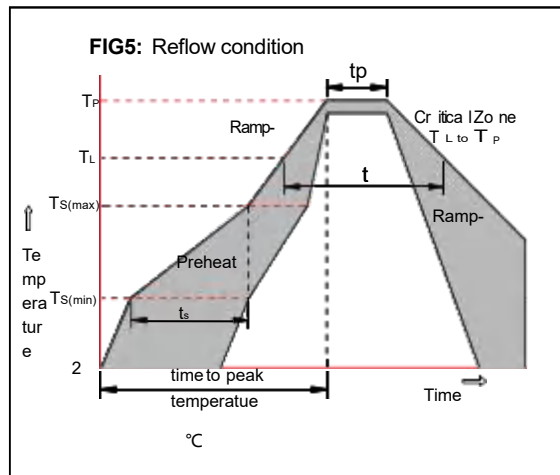


I_S — V_{SD}



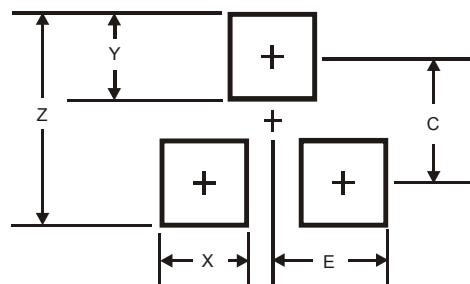
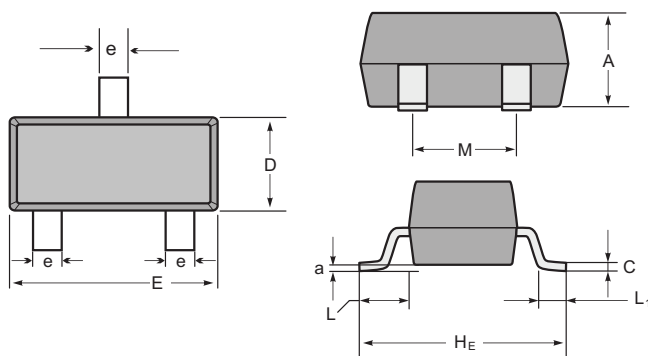
Soldering parameters

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

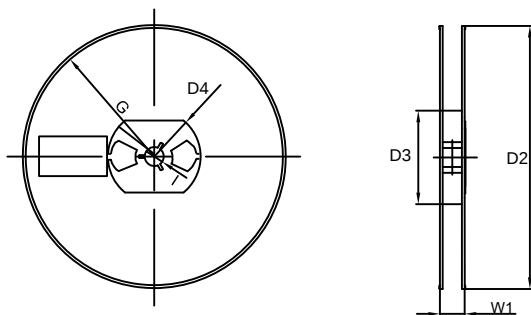


SOT-23 mechanical data

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



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