V_{DSS} -60 V
I_D -170 mA
$R_{DS(ON)}$ 4.8 Ω

PD *

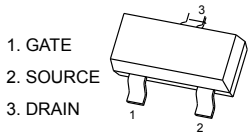
Features

Advanced trench cell design.
High speed switch.
G-S ESD Protected: ±2000V
Pb-Free Package is available.
We declare that the material of product compliance with RoHS requirements and Halogen Free.

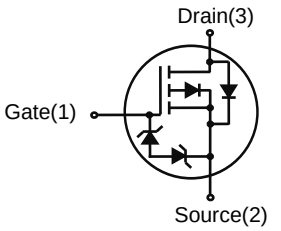
Applications

Portable appliances.
Load switch appliances.

SOT-23



Equivalent Circuit



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

MAXIMUM RATINGS

Parameter	Symbol	Limits	Unit
Drain–Source Voltage	VDSS	-60	V
Gate–to–Source Voltage	VGSS	±20	V
Drain Current – Continuous TA = 25°C – Pulsed (tp≤10μs)	 ID IDM	 -170 -520	mA

THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Total Device Dissipation, FR−5 Board (Note 1) @ TA = 25ºC Derate above 25ºC	PD	225 1.8	mW mW/ºC
Thermal Resistance, Junction–to–Ambient(Note 1)	RΘJA	556	ºC/W
Junction and Storage temperature	TJ,Tstg	−55~+150	ºC
Maximum Lead Temperature for Soldering Purposes, for 10 seconds	TL	260	ºC

1. FR–5 = 1.0×0.75×0.062 in.

Electrical Characteristics (T_A=25℃unless otherwise noted)

OFF CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain–Source Breakdown Voltage (VGS = 0, ID = -250μA)	VBRDSS	-60	-	-	V
Zero Gate Voltage Drain Current (VGS = 0, VDS = -25 V) (VGS = 0, VDS = -60 V)	IDSS	- -	- -	-0.1 -15	μA
Gate–Body Leakage Current, Forward (VGS = 20 V)	IGSSF	-	-	10	μA
Gate–Body Leakage Current, Reverse (VGS = - 20 V)	IGSSR	-	-	-10	μA

ON CHARACTERISTICS (Note 2)

Gate Threshold Voltage (VDS = VGS, ID = -250μA)	VGS(th)	-1.0	-	-2.2	V
Static Drain–Source On–State Resistance (VGS = -4.5 V, ID = -100 mA) (VGS = -10 V, ID = -100 mA)	RDS(on)	- -	4.8 4	6.2 5.5	Ω
Transfer Admittance (VDS = -25 V, ID = -100 mA, f = 1.0 kHz)	|yfs|	50	-	-	mS

DYNAMIC CHARACTERISTICS

Input Capacitance (VDS = - 25 V,VGS=0V,f=1MHz)	Ciss	-	28.6	-	pF
Output Capacitance (VDS = - 25 V,VGS=0V,f=1MHz)	Coss	-	4	-	pF
Reverse Transfer Capacitance (VDS = - 25 V,VGS=0V,f=1MHz)	Crss	-	2.45	-	pF
Total Gate Charge	Qg	-	1.1	-	nC
Gate-Source Charge (VDS = -25V, VGS = -4.5V, ID = -0.1A)	Qgs	-	0.3	-	
Gate-Drain Charge	Qgd	-	0.2	-	

SWITCHING CHARACTERISTICS

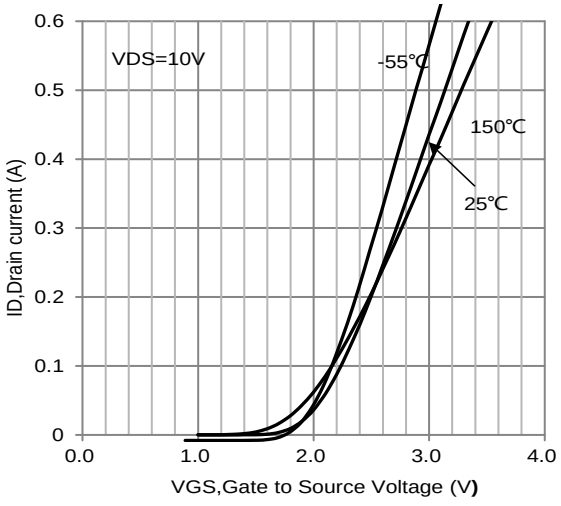
Turn-On Delay Time	(VDS = –25 V,VGEN =-10V,IDS = –0.1 A,RL =250Ω,RG=6Ω)	td(on)	-	4.8	-	ns
Rise Time		tr	-	19	-	
Turn-Off Delay Time		td(off)	-	52	-	
Fall Time		tf	-	32	-	

SOURCE–DRAIN DIODE CHARACTERISTICS

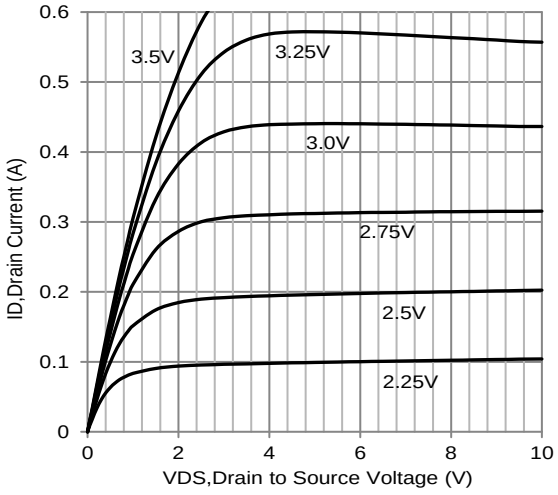
Continuous Current	IS	-	-	-0.17	A
Pulsed Current	ISM	-	-	-0.52	A
Forward Voltage	VSD	-	-2.2	-	V

2.Pulse Test: Pulse Width ≤300 μs, Duty Cycle ≤2.0%.

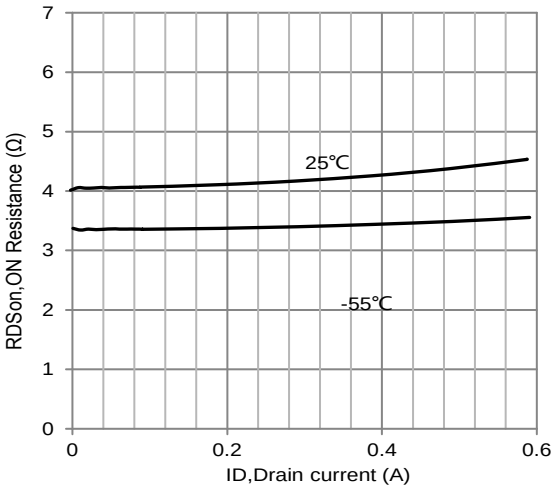
RATING AND CHARACTERISTIC CURVES



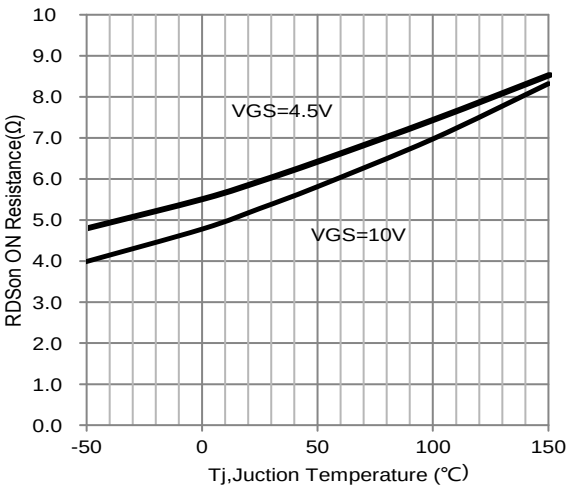
ID vs. VGS



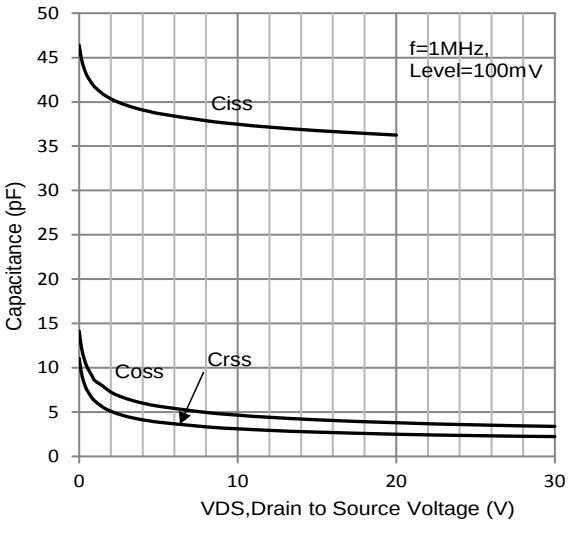
ID vs. VDS



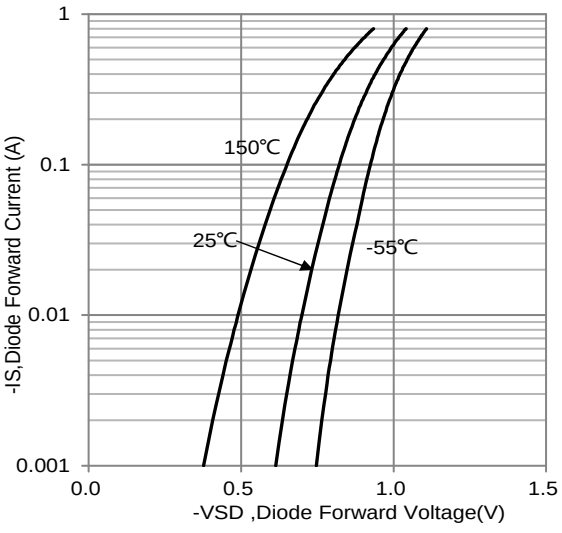
RDSon vs. ID



RDSon vs. Tj



Capacitance

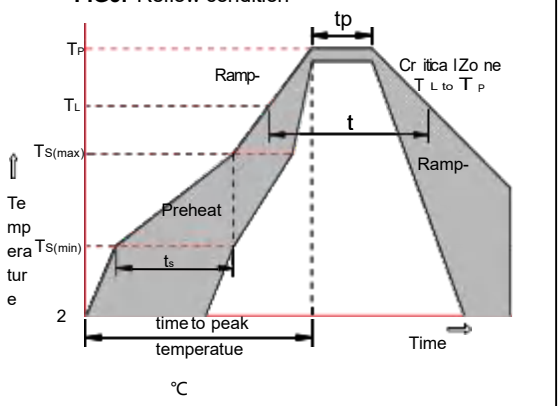


IS vs. VSD

Soldering parameters

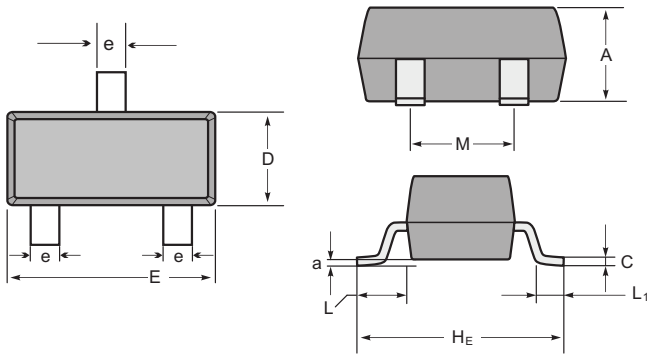
Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid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

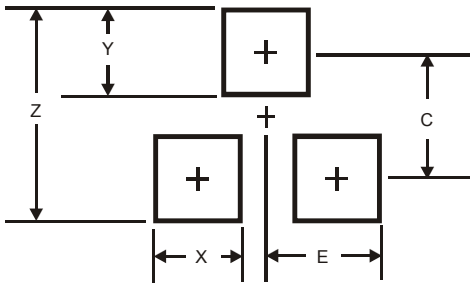
FIG5: Reflow condition



Package Dimensions & Suggested Pad Layout

SOT23





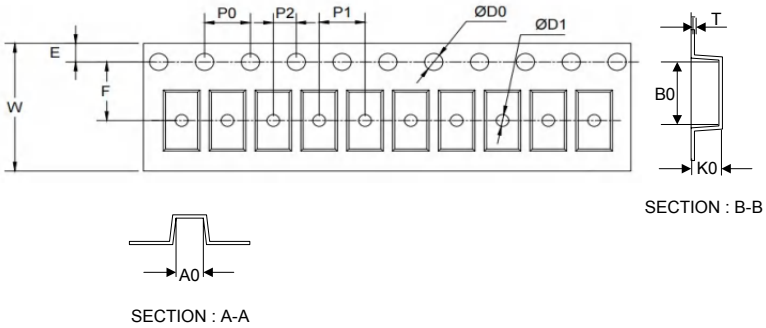
SOT-23 mechanical data

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 & rell specification

Tape

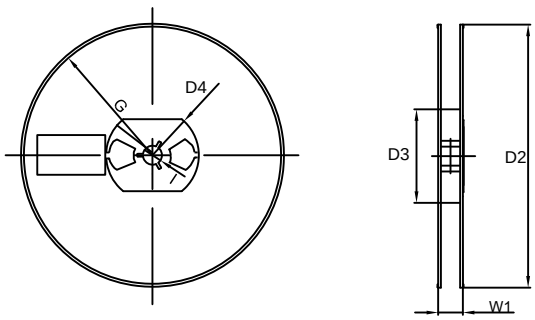


SECTION : B-B

SECTION : A-A

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

7” Reel



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