General Features

- $R_{DS(ON)}$ <21mΩ @ V_{GS} = -4.5V
  $R_{DS(ON)}$ <28mΩ @ V_{GS} = -2.5V
- High Power and Current Handing Capability
- Lead Free Product is Acquired
- Surface Mount Package

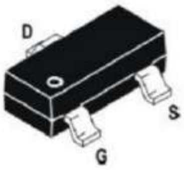
Product Summary

VDS	-20	V
RDS(on),max.@ VGS=4.5 V	21	mΩ
ID	-9	A

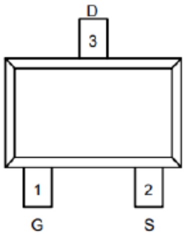
Applications

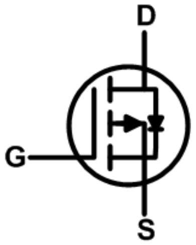
- PWM Applications
- Load Switch
- Power Management

top view



SOT23-3





P-channel

Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current	T_C = 25℃	-9	A
		T_C = 100℃	-5	
I_{DM}	Pulsed Drain Current note1		-15	A
P_D	Power Dissipation	T_C = 25℃	1.8	W
$R_{\theta JC}$	Thermal Resistance, Junction to Ambient		6.9	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

Electrical Characteristics (T_C=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D= -250μA	-20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -20V, V_{GS} = 0V,	-	-	-1	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS} =0V, V_{GS} = ±12V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D= -250μA	-0.4	-0.7	-1.0	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note2	V_{GS} =-4.5V, I_D =-4.A	-	16	21	mΩ
		V_{GS} =-2.5V, I_D =-3.A	-	20	28	
g_{FS}	Forward Transconductance	V_{DS} =-5V, I_D = -6.7A	20	-	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} =-10V, V_{GS} = 0V, f = 1.0MHz	-	1200	-	pF
C_{oss}	Output Capacitance		-	230	-	pF
C_{rss}	Reverse Transfer Capacitance		-	90	-	pF
Q_g	Total Gate Charge	V_{DS} = -16V, I_D = -9A, V_{GS} = -4.5V	-	15	48	nC
Q_{gs}	Gate-Source Charge		-	4	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	6	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD} = -10V, I_D = -1A, R_{GEN}=10Ω,V_{GS}=-4.5V	-	11	-	ns
t_r	Turn-on Rise Time		-	18	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	30	-	ns
t_f	Turn-off Fall Time		-	10	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-1	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-10	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = -8A	-	-	-1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

■ Typical Performance Characteristics

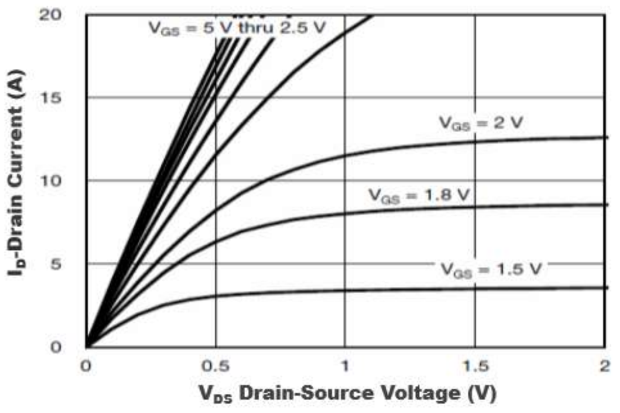


Figure1. Output Characteristics

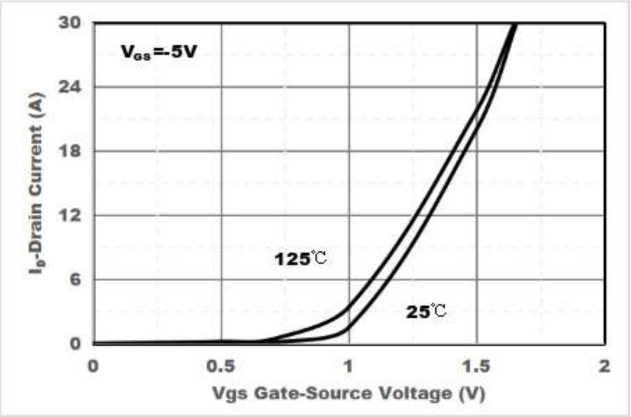


Figure2. Transfer Characteristics

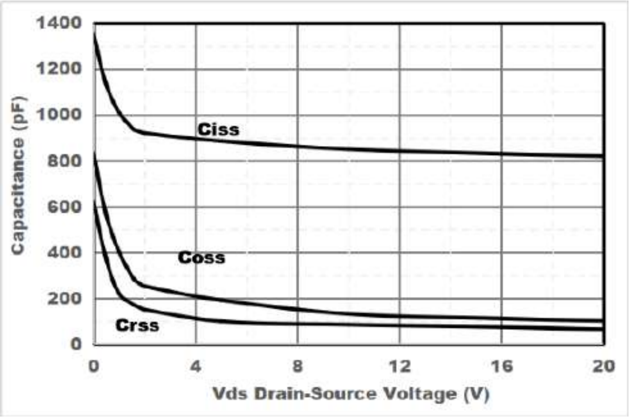


Figure3. Capacitance Characteristics

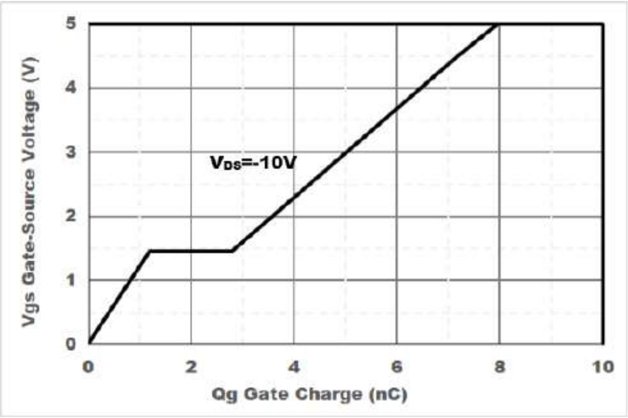


Figure4. Gate Charge

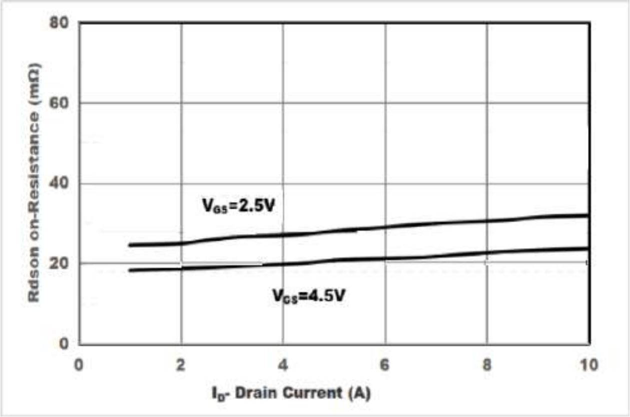


Figure5. Drain-Source on Resistance

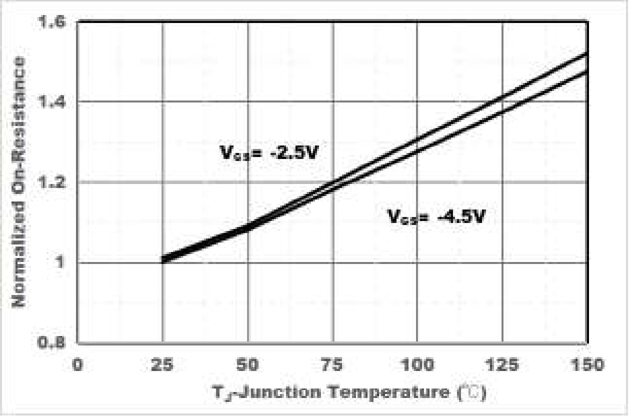


Figure6. Drain-Source on Resistance

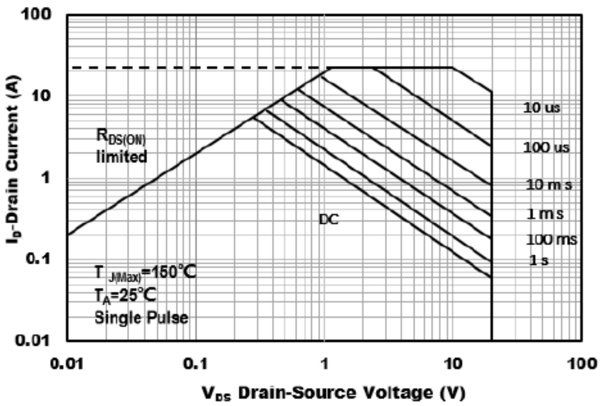


Figure7. Safe Operation Area

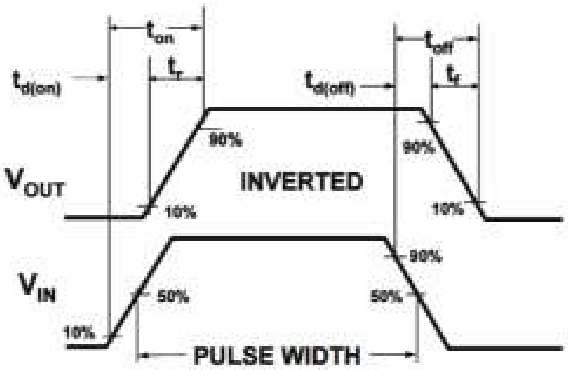
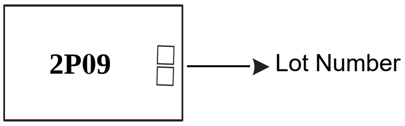


Figure8. Switching wave

Ordering and Marking Information

Ordering Device No	Marking	Package	Packing	Quantity
ASDM20P09-ZB-R	20P09	SOT23-3	Tape&Reel	3000

PACKAGE	MARKING
SOT23-3	

ASDM3404-ZB- R

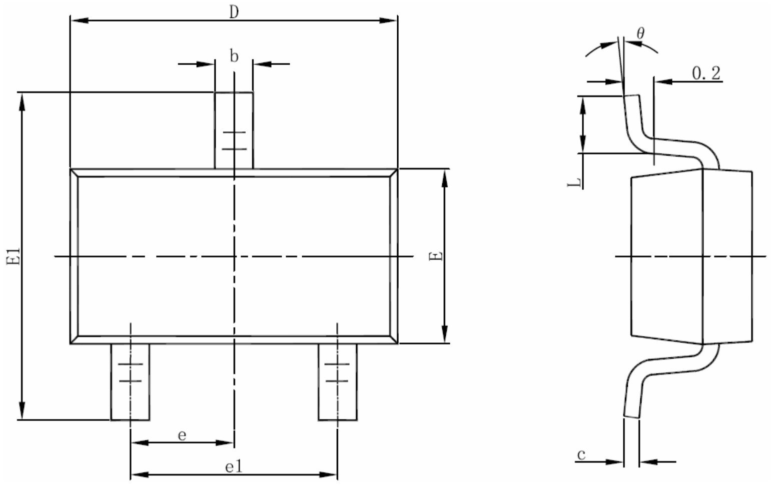
1 Packing Type

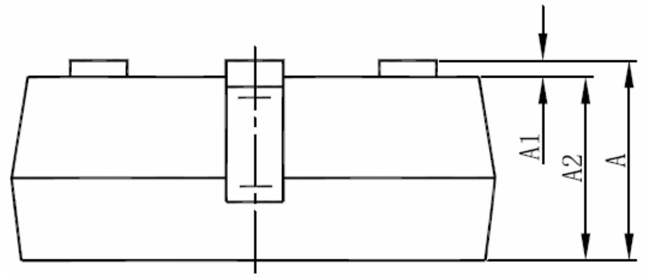
2 Package Type

1 T:Tube,R:Tape Reel

2 ZB: SOT23-3

SOT-23-3L PACKAGE INFORMATION





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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