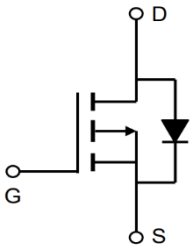
AP3407BI

-30V P-Channel Enhancement Mode MOSFET

Description

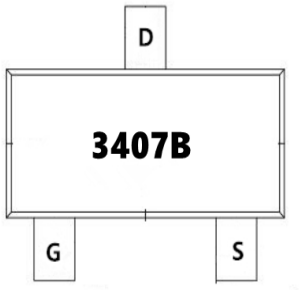
The AP3407BI uses advanced Trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 10V. This device is suitable for use as a Battery protection or in other Switching application.



General Features

V_{DS} = -30V I_D =-4.2A

$R_{DS(ON)}$ < 55mΩ @ V_{GS}=10V **(Type：45mΩ)**



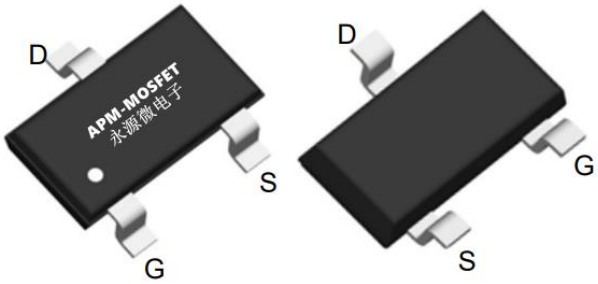
Top View **Bottom View**

Application

Battery protection

Load switch

Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP3407BI	SOT23L	3407B-AP	3000

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

Symbol	Parameter	Max.	Units
VDSS	Drain-Source Voltage	-30	V
VGSS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ -10V[1]	-4.2	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ -10V[1]	-2.6	A
IDM	Pulsed Drain Current note1	-16.8	A
P_D	Power Dissipation T_A= 25℃	1	W
RθJA	Thermal Resistance, Junction to Ambient	125	℃/W
RθJC	Thermal Resistance from Junction to Ambient[2]	135	℃/W
TJ, TSTG	Operating and Storage Temperature Range	-55 to +150	℃

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	V_{GS}= 0V, I_D= -250μA	-30	-	-	V
IDSS	Zero Gate Voltage Drain Current	V_{DS}= -30V, V_{GS}= 0V	-	-	-1	μA
IGSS	Gate-Source Leakage	V_{DS}= 0V, V_{GS}= ±20V	-	-	±100	nA
VGS(th)	Gate-Source Threshold voltage	V_{DS}= V_{GS}, I_D= -250μA	-1.2	-1.5	-2.5	V
RDS(on)	Drain-Source on-State Resistance[3]	V_{GS}= -10V, I_D= -4A	-	45	58	mΩ
		V_{GS}= -4.5V, I_D= -3A	-	62	75	
Ciss	Input Capacitance	V_{GS} = 0V , V_{DS} = -15V, f = 1.0MHz	-	520	-	pF
Coss	Output Capacitance		-	70	-	
Crss	Reverse Transfer Capacitance		-	60	-	
Q_g	Total Gate Charge	V_{GS} = -10V, V_{DS} = -15V, I_D = -4.1A	-	12	-	nC
Qgs	Gate−Source Charge		-	3	-	
Qgd	Gate−Drain Charge		-	2	-	
td(on)	Turn-on Delay Time	V_{GS}= -10V, V_{DS}= -15V , R_L= 15Ω,R_{GEN}= 2.5Ω	-	5	-	ns
t_r	Rise Time		-	28	-	
td(off)	Turn-off Delay time		-	30	-	
t_f	Fall Time		-	35	-	
VSD	Diode Forward Voltage[3]	I_S = -4.1A, V_{GS} = 0V	-	-	-1.2	V
IS	Continuous Source Current		-	-	-4.1	A

Note :

1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.

2、The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3、The power dissipation is limited by 150℃ junction temperature

4、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

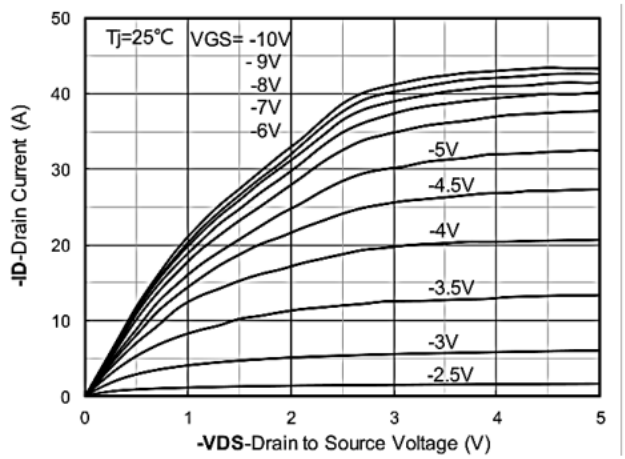


Figure 1. Output Characteristics

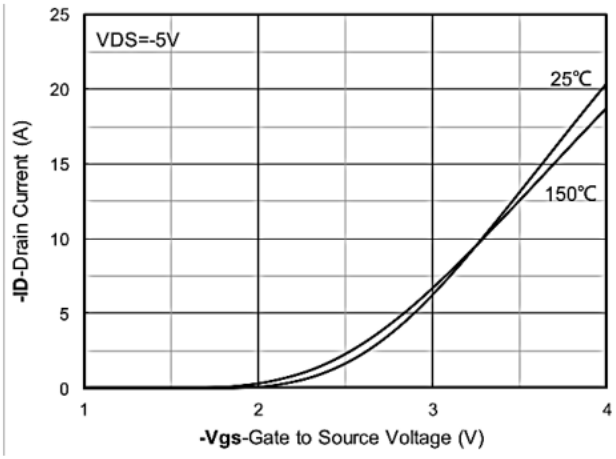


Figure 2. Transfer Characteristics

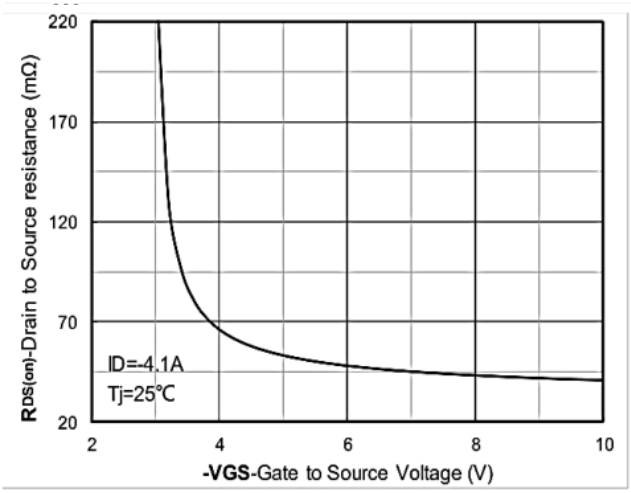


Figure 4. On-Resistance vs Gate to

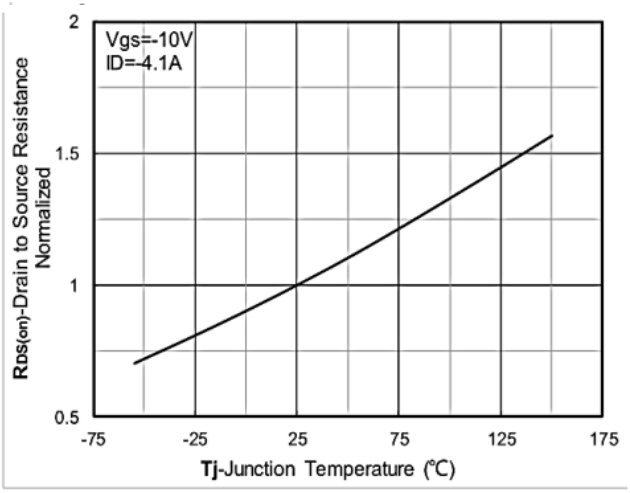


Figure 5. Normalized On-Resistance

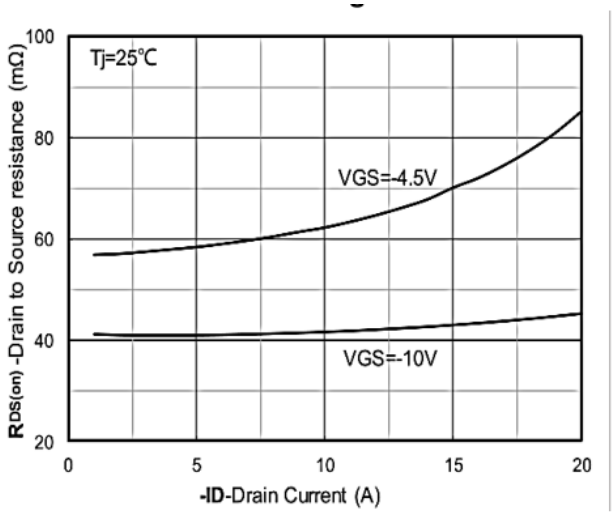


Figure 6. RDS(on) VS Drain Current

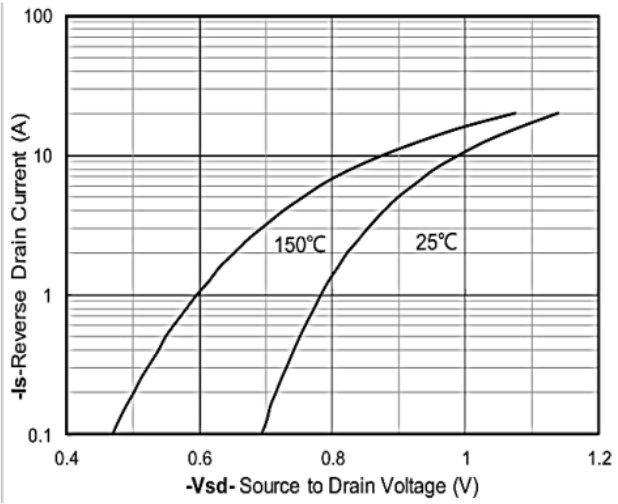


Figure 7. Forward characteristics of reverse diode

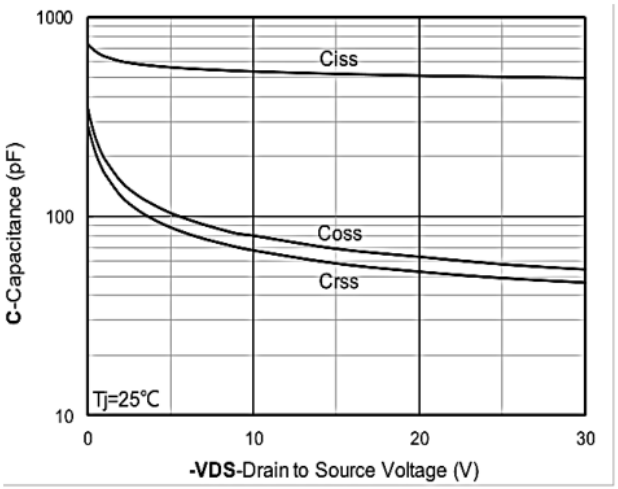


Figure 7. Capacitance Characteristics

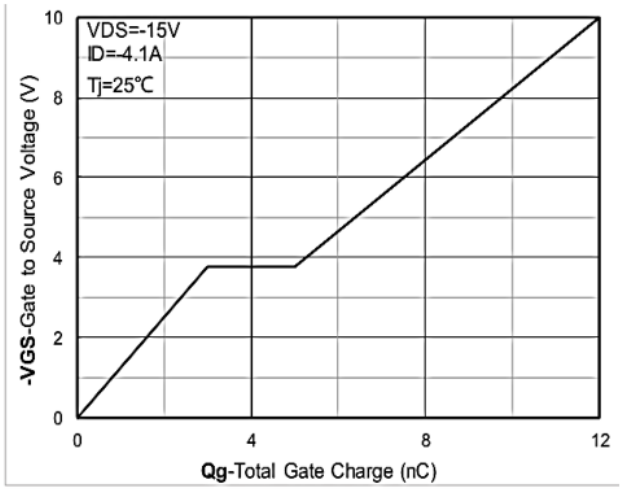


Figure 8. Gate Charge

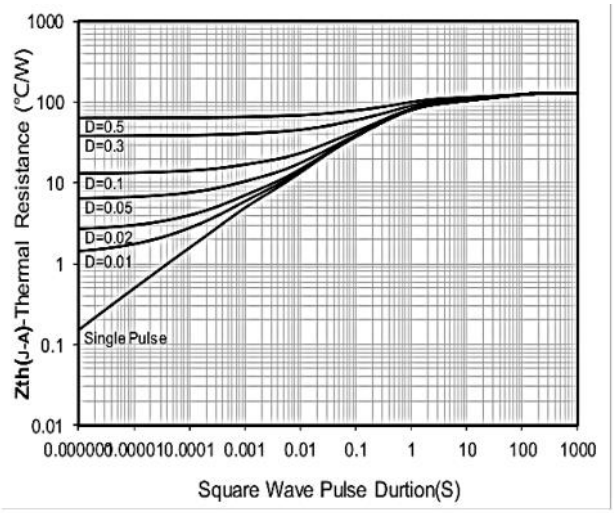


Figure 9. Maximum Transient Thermal Impedance

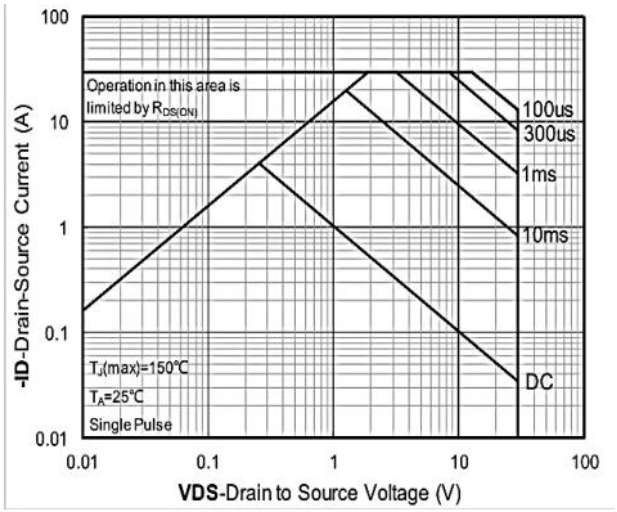
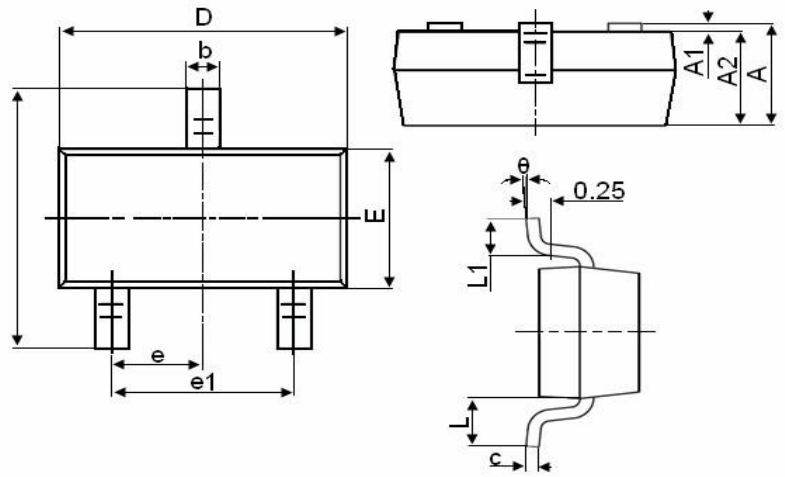


Figure 10. Safe Operation Area

Package Mechanical Data-SOT23-XC-Single



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

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Edition	Date	Change
Rve1.0	2022/8/31	Initial release