AT3407SE

P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-30V	48mΩ@-10V	-4.1A
	69mΩ@-4.5V	

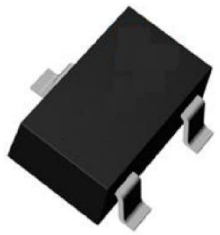
Feature

- Advanced trench technology
- Excellent $R_{DS(ON)}$
- Low gate charge

Application

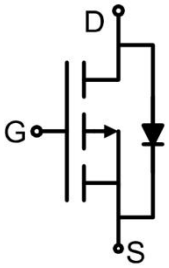
- Load switch
- PWM Application
- Power Management

Package

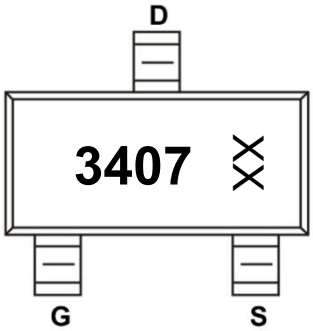


SOT-23-3L

Circuit diagram



Marking



Absolute maximum ratings (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_A=25℃)	I_D	-4.1	A
Continuous Drain Current (T_A=100℃)	I_D (100℃)	-2.46	A
Pulsed Drain Current[1]	I_{DM}	-16.4	A
Power Dissipation (T_A=25℃)	P_D	1.3	W
Thermal Resistance Junction to Ambient[2]	$R_{\theta JA}$	97	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_J=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} =0V, I_D =-250μA	-30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-30V, V_{GS} =0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1	-1.5	-2.2	V
Drain-source on-resistance[3]	$R_{DS(on)}$	V_{GS} =-10V, I_D =-4.1A		37	48	mΩ
		V_{GS} =-4.5V, I_D =-3.5A		53	69	
Dynamic characteristics[4]						
Input Capacitance	C_{iss}	V_{DS} =-15V, V_{GS} =0V, f =1MHz		408		pF
Output Capacitance	C_{oss}			72		
Reverse Transfer Capacitance	C_{rss}			60		
Total Gate Charge	Q_g	V_{DS} =-15V, V_{GS} =-10V I_D =-2A		11		nC
Gate-Source Charge	Q_{gs}			2		
Gate-Drain Charge	Q_{gd}			2		
Turn-on delay time	$t_{d(on)}$	V_{DS} =-15V, V_{GS} =-10V I_D =-2A, R_G =3Ω		3		nS
Turn-on rise time	t_r			2		
Turn-off delay time	$t_{d(off)}$			26		
Turn-off fall time	t_f			15		
Source-Drain Diode characteristics						
Diode Continuous Current	I_S				-4.1	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =-4.1A			-1.2	V
Reverse Recovery Time	T_{rr}	I_F =-2A, di/dt =100A/μs		9		nS
Reverse Recovery Charge	Q_{rr}			3		nC

Notes:

1) Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2) $R_{\theta JA}$ is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB.

3) Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

4) Guaranteed by design, not subject to production testing.

Typical Characteristics

Figure 1: Output Characteristics

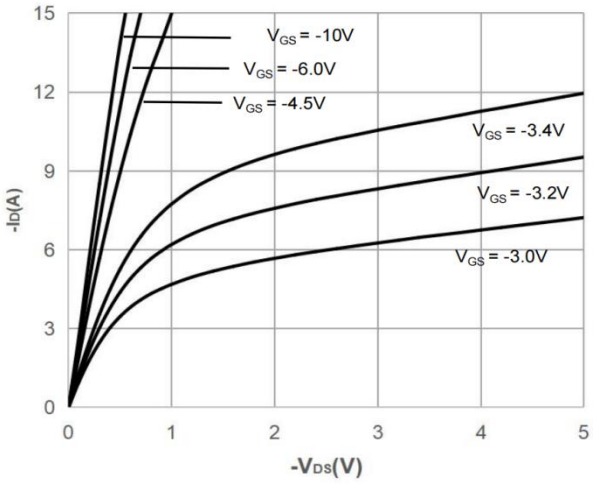


Figure 2: Typical Transfer Characteristics

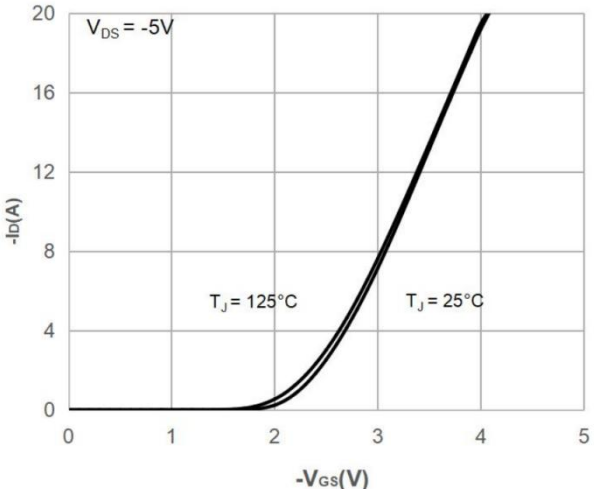


Figure 3: On-resistance vs. Drain Current

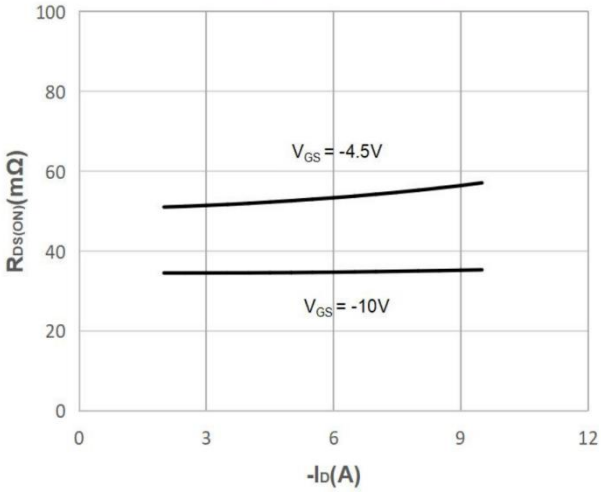


Figure 4: Body Diode Characteristics

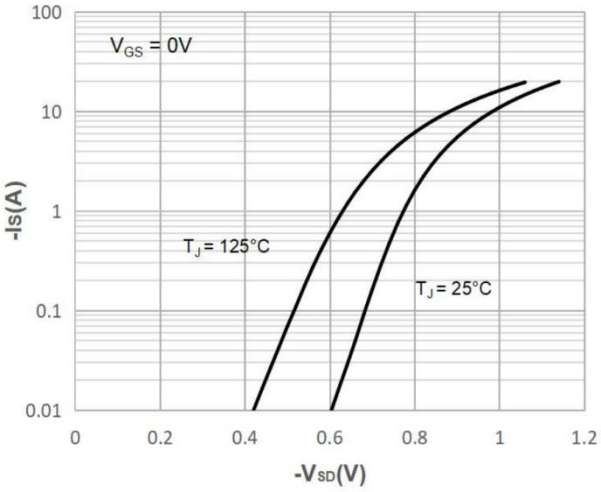


Figure 5: Gate Charge Characteristics

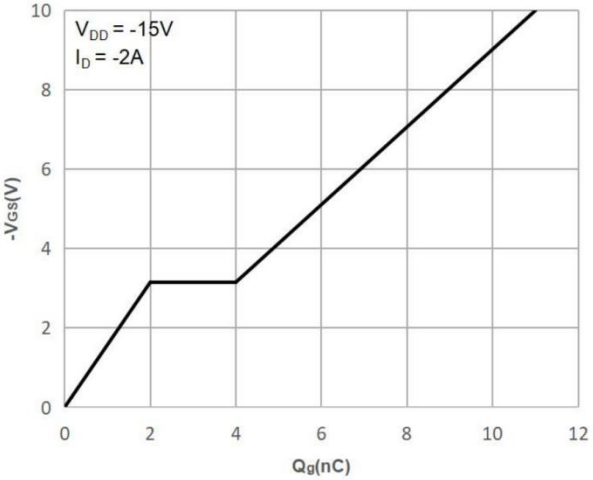
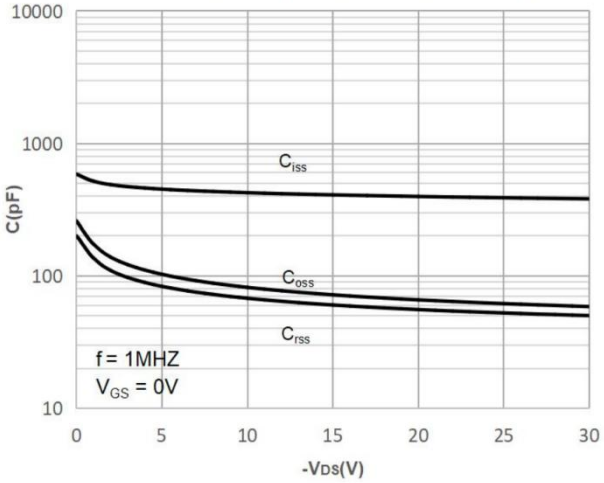


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

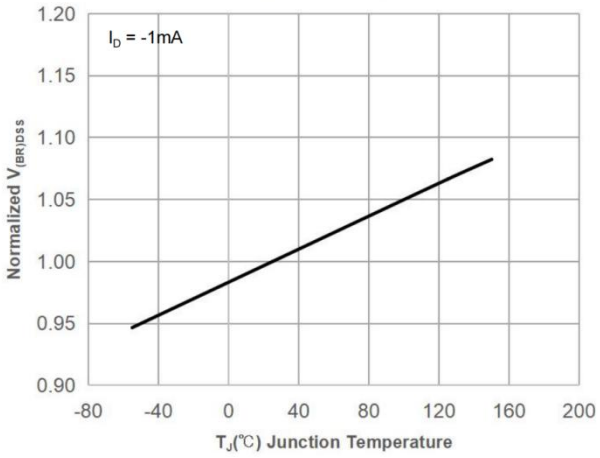


Figure 8: Normalized on Resistance vs. Junction Temperature

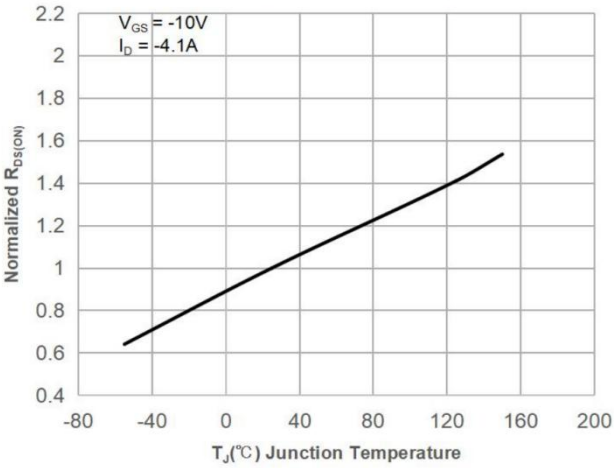


Figure 9: Maximum Safe Operating Area

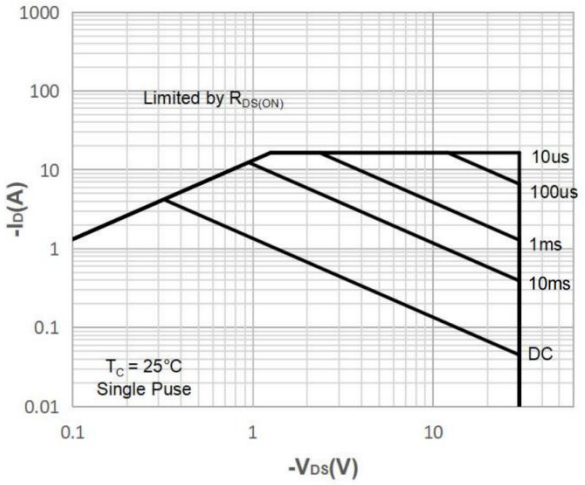


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

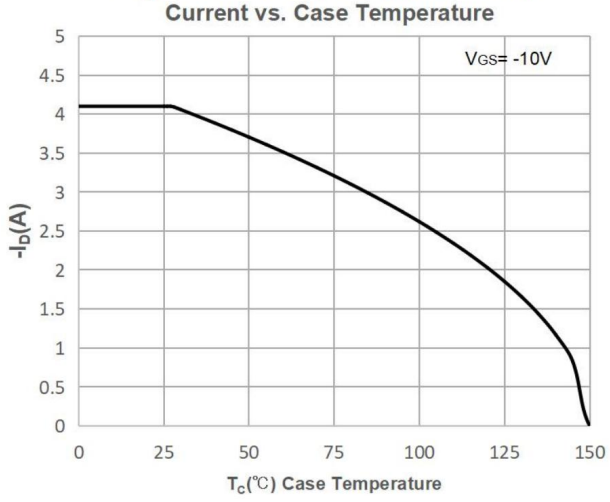


Figure 11: Normalized Maximum Transient Thermal Impedance

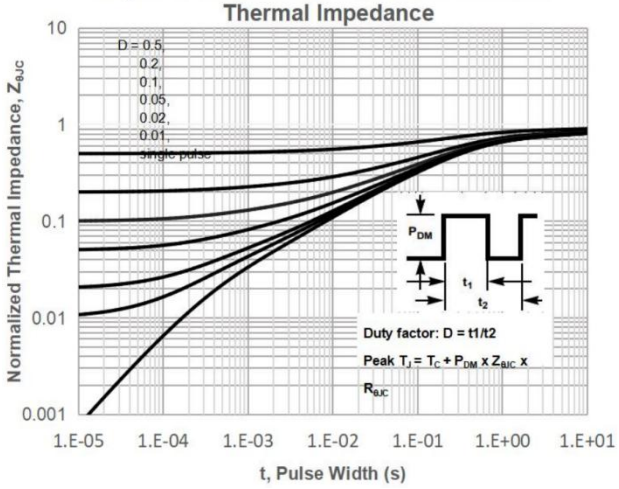
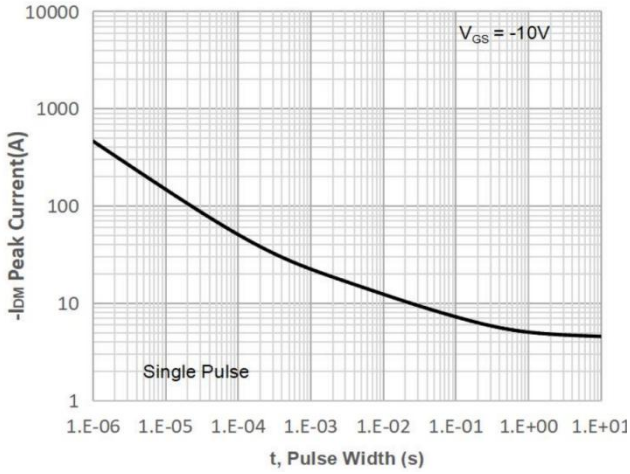
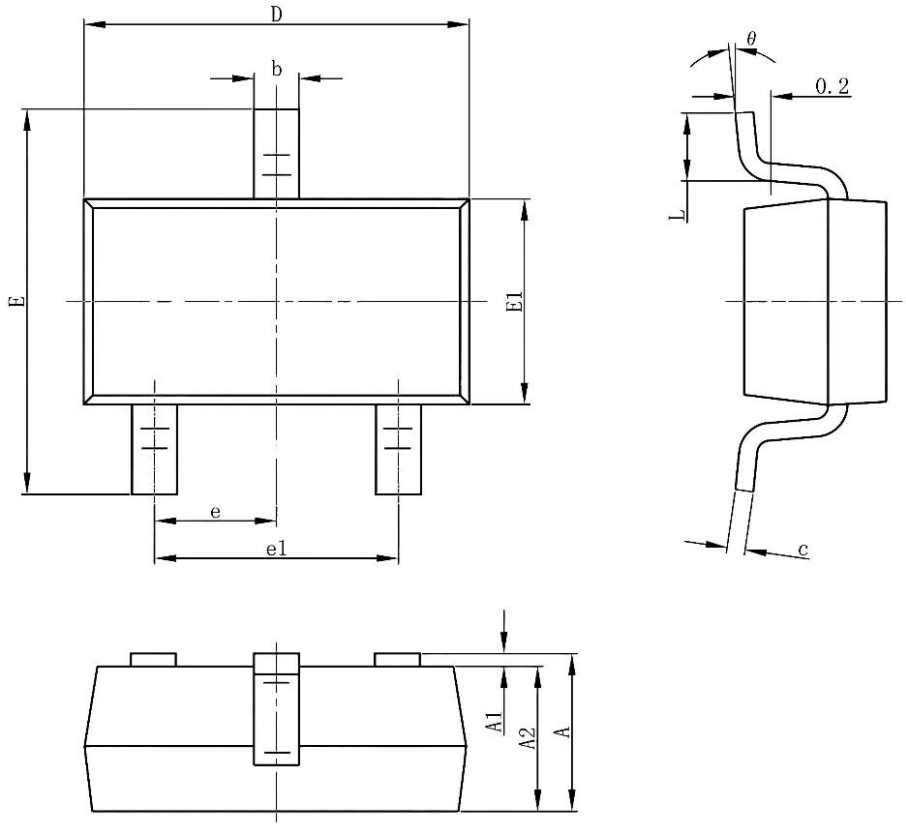


Figure 12: Peak Current Capacity



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	0.150	0.000	0.006
A2	1.050	1.100	0.041	0.043
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
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950 REF.		0.037 REF.	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0.041	0.049