

General Description

The MY4407 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

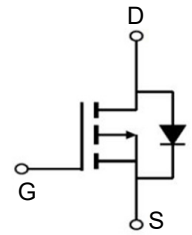
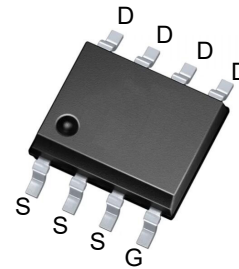


Features

V_{DSS}	-30	V
I_D	-13	A
$R_{DS(ON)}$ (at $V_{GS} = -10V$)	11	m Ω
$R_{DS(ON)}$ (at $V_{GS} = -4.5V$)	15	m Ω

Application

- Battery protection
- Load switch
- Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY4407	SOP-8	4407	3000

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_A = 25^\circ\text{C}$	Drain Current ³ , $V_{GS} @ 10V$	-13	A
$I_D @ T_A = 70^\circ\text{C}$	Drain Current ³ , $V_{GS} @ 10V$	-11	A
I_{DM}	Pulsed Drain Current ¹	-40	A
$P_D @ T_A = 25^\circ\text{C}$	Total Power Dissipation	2.5	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient ³	50	$^\circ\text{C/W}$

Electrical Characteristics ($T_J=25\text{ }^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=-10V, I_D=-10A$	-	11	-	m Ω
		$V_{GS}=-4.5V, I_D=-6A$	-	15	-	m Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-	-3	V
g_{fs}	Forward Transconductance	$V_{DS}=-10V, I_D=-10A$	-	22	-	S
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-24V, V_{GS}=0V$	-	-	-10	μA
I_{GSS}	Gate-Source Leakage	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Q_g	Total Gate Charge	$I_D=-6A$	-	28	45	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=-15V$	-	7	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	$V_{GS}=-4.5V$	-	11	-	nC
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=-15V$	-	13	-	ns
t_r	Rise Time	$I_D=-1A$	-	10	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=3.3\ \Omega$	-	80	-	ns
t_f	Fall Time	$V_{GS}=-10V$	-	37	-	ns
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=-15V, f=1.0MHz$	-	2940	4700	pF
C_{oss}	Output Capacitance		-	290	-	pF
C_{rss}	Reverse Transfer Capacitance		-	210	-	pF
R_g	Gate Resistance	$f=1.0MHz$	-	6.2	12.4	Ω
V_{SD}	Forward On Voltage ²	$I_S=-2.1A, V_{GS}=0V$	-	-	-1.2	V
t_{rr}	Reverse Recovery Time	$I_S=-10A, V_{GS}=0V, di/dt=100A/\mu s$	-	19	-	ns
Q_{rr}	Reverse Recovery Charge		-	6	-	nC

Notes:

1. Pulse width limited by Max. junction temperature.

2. Pulse test

3. Surface mounted on 1 in² copper pad of FR4 board, $t \leq 10s$; 125 $^{\circ}\text{C}/\text{W}$ when mounted on Min. copper pad.

Typical Electrical and Thermal Characteristics

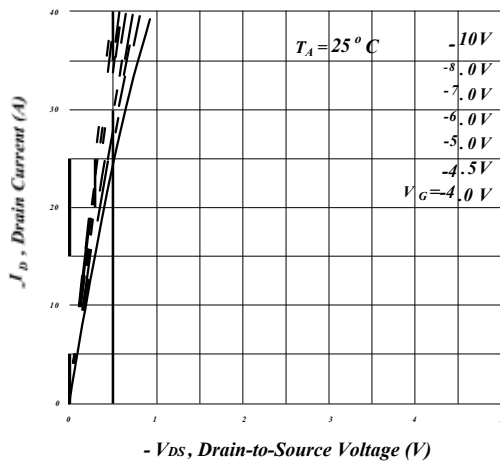


Fig 1. Typical Output Characteristics

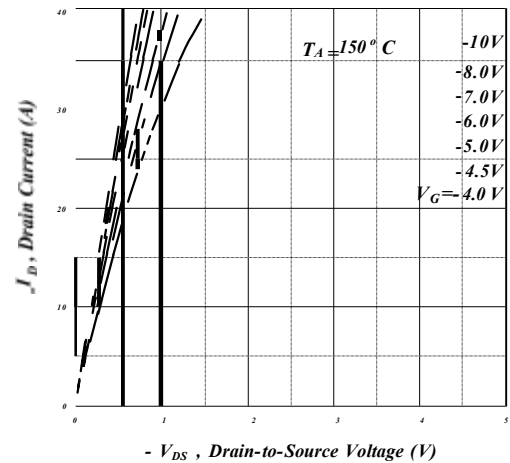


Fig 2. Typical Output Characteristics

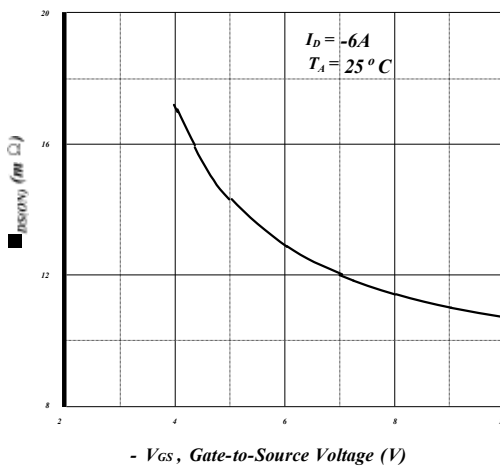


Fig 3. On-Resistance v.s. Gate Voltage

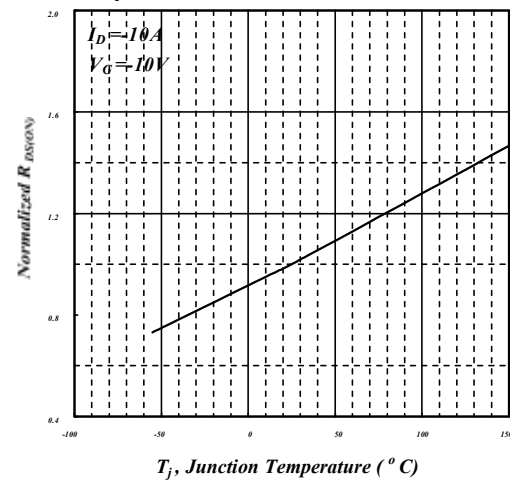
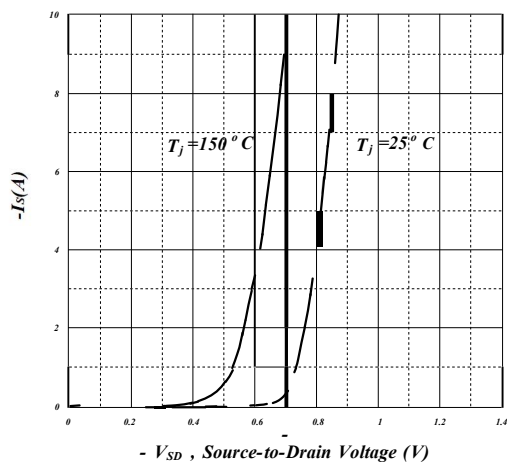


Fig 4. Normalized On-Resistance v.s. Junction Temperature



Reverse Diode

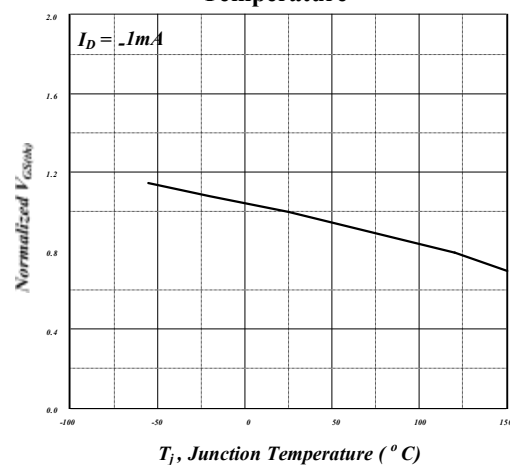
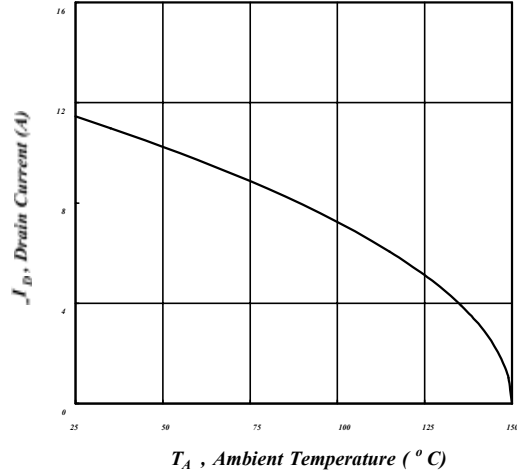
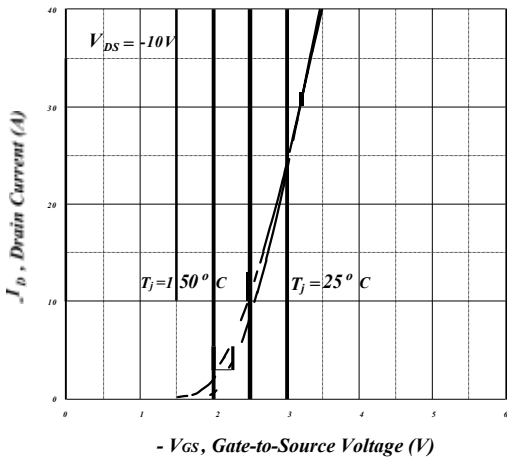
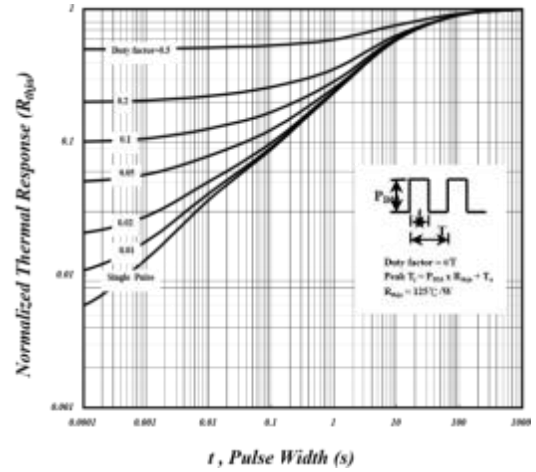
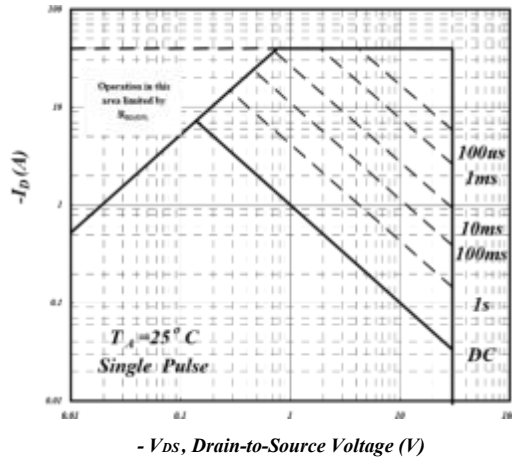
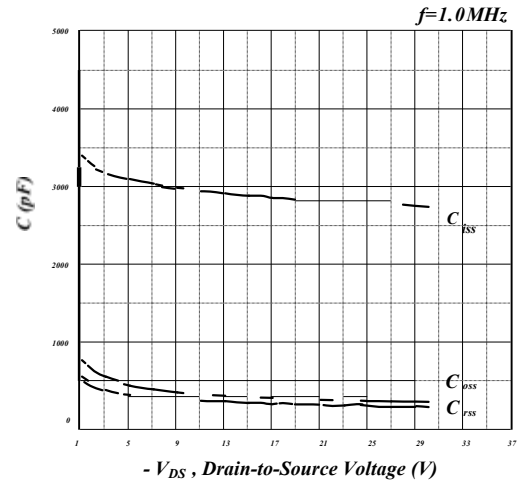
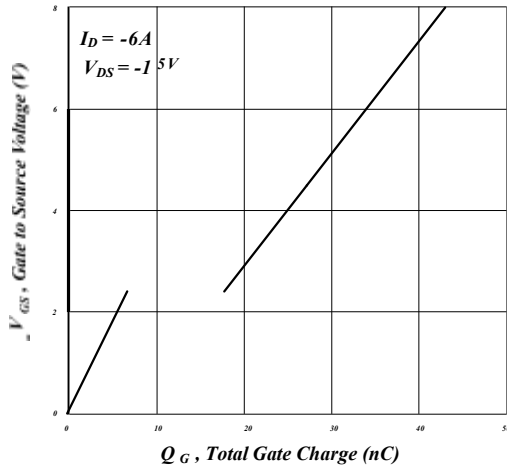


Fig 6. Gate Threshold Voltage v.s. Junction Temperature



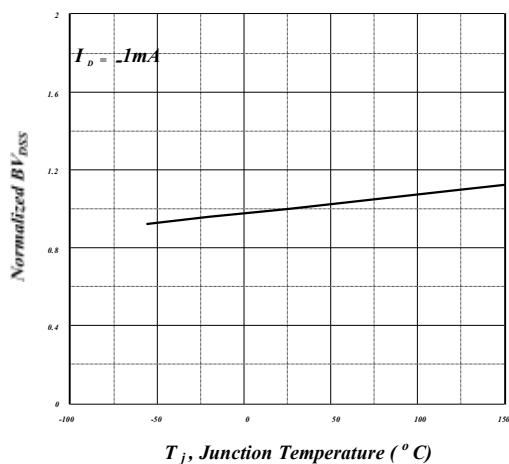


Fig 13. Normalized BV_{DSS} v.s. Junction Temperature

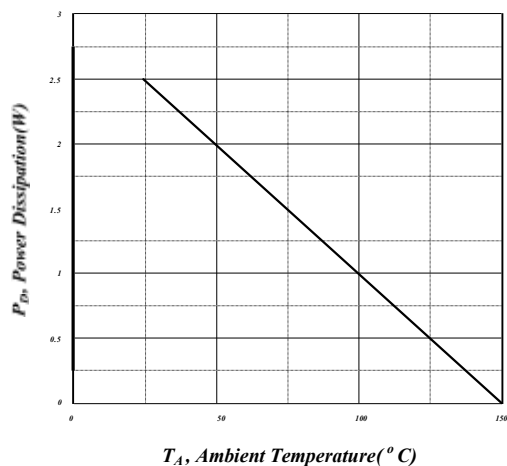


Fig 14. Total Power Dissipation

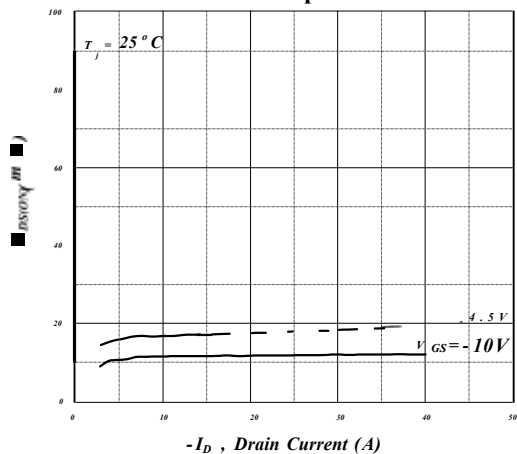
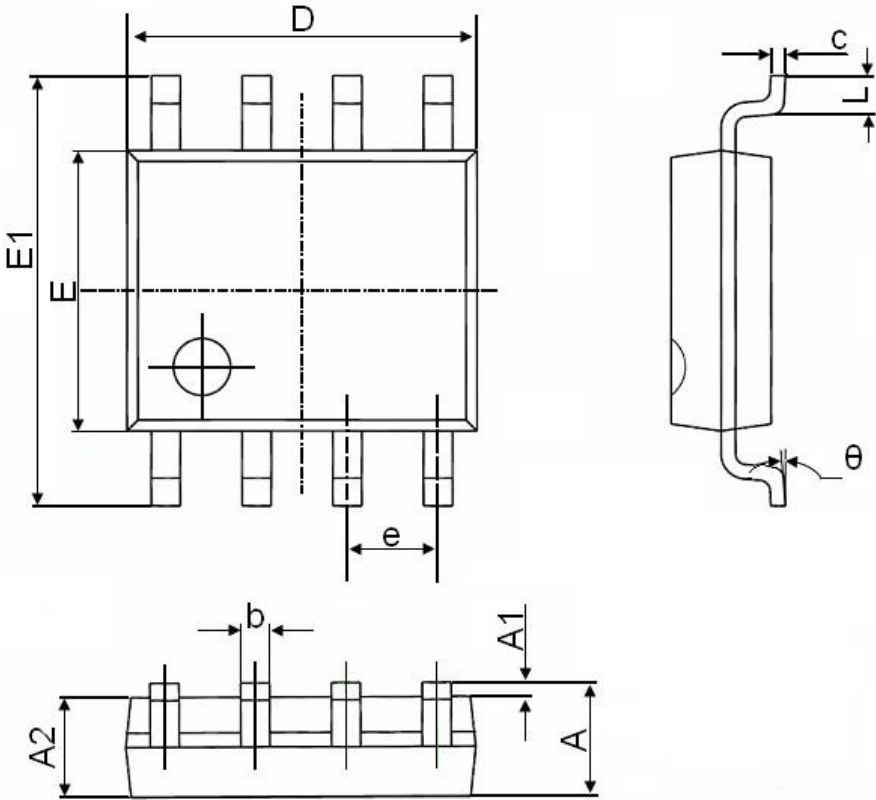


Fig 15. Typ. Drain-Source on State Resistance

Package Mechanical Data-SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050