MY4407
-30V P-Channel Enhancement ModeMOSFET

MAOYUANWEI semiconductor

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.
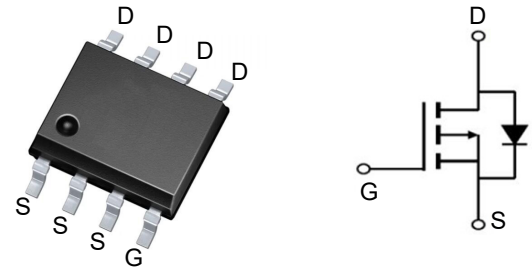
Application

- Battery protection
- Load switch
- Uninterruptible power supply

Features

RoHS Compliant

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

Package Marking and Ordering Information

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

Absolute Maximum Ratings (T$_A$=25℃ 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℃	Drain Current[3], V_{GS} @ 10V	-13	A
I_D@T$_A$=70℃	Drain Current[3], V_{GS} @ 10V	-11	A
I_{DM}	Pulsed Drain Current[1]	-40	A
P_D@T$_A$=25℃	Total Power Dissipation	2.5	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
Rthj-a	Maximum Thermal Resistance, Junction-ambient[3]	50	℃/W

MY4407

-30V P-Channel Enhancement Mode MOSFET

MAOYUANWEI semiconductor

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250uA	-30	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=-10V, I_D=-10A	-	11	-	mΩ
		V_{GS}=-4.5V, I_D=-6A	-	15	-	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	-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	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=+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 Ω	-	80	-	ns
t_f	Fall Time	V_{GS}=-10V	-	37	-	ns
C_{iss}	Input Capacitance		-	2940	4700	pF
C_{oss}	Output Capacitance	V_{GS}=0V V_{DS}=-15V f=1.0MHz	-	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/μs	-	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 ≤ 10s ; 125 ℃/W when mounted on Min. copper pad.

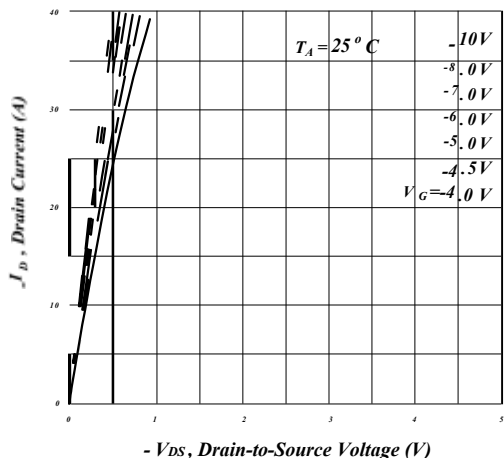## Typical Electrical and Thermal Characteristics
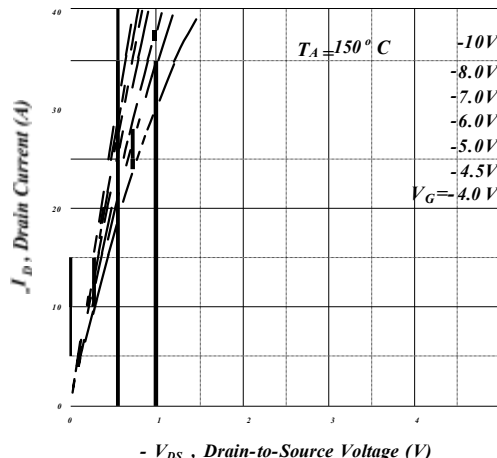
Fig 1. Typical Output Characteristics
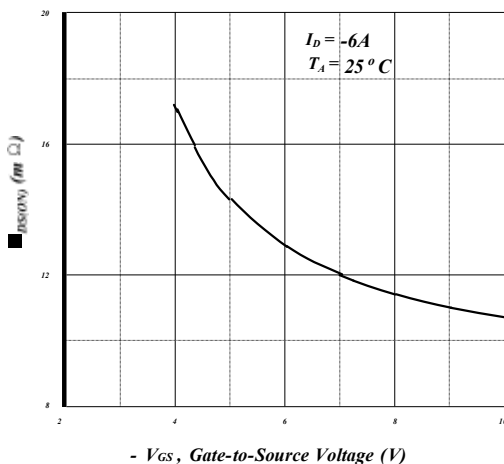
Fig 2. Typical Output Characteristics

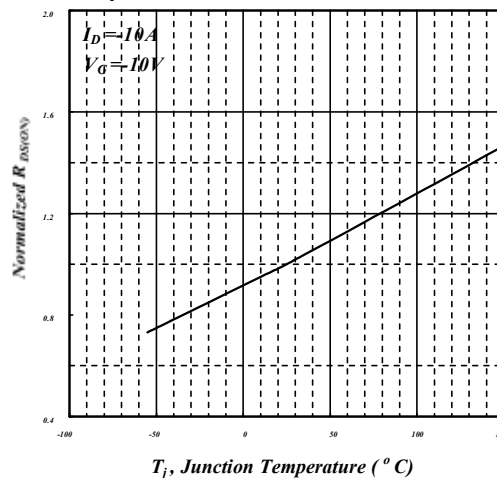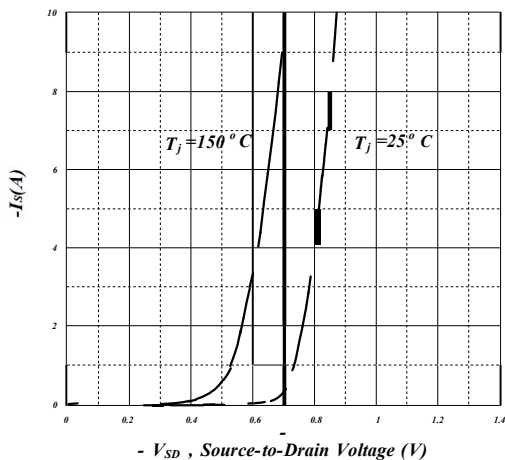**Fig 3. On-Resistance v.s. Gate Voltage**

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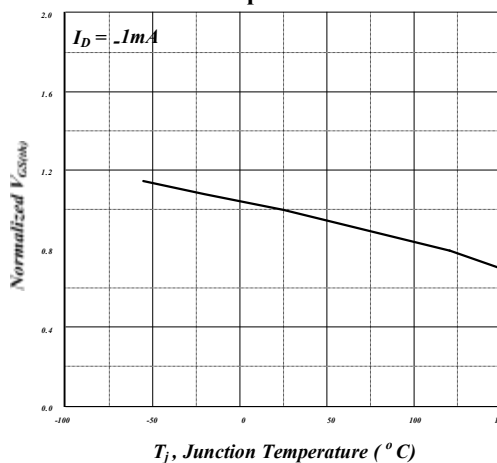
Reverse Diode

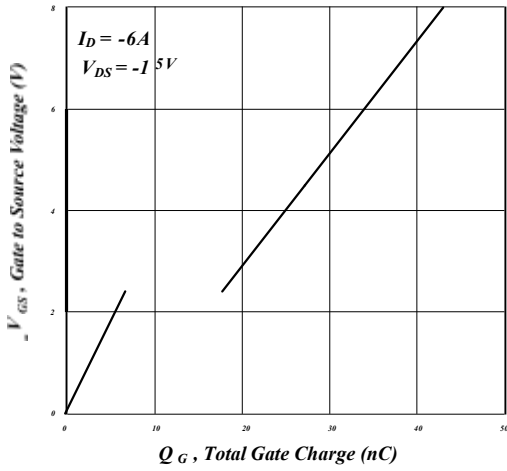**Fig 6. Gate Threshold Voltage v.s. Junction Temperatur**
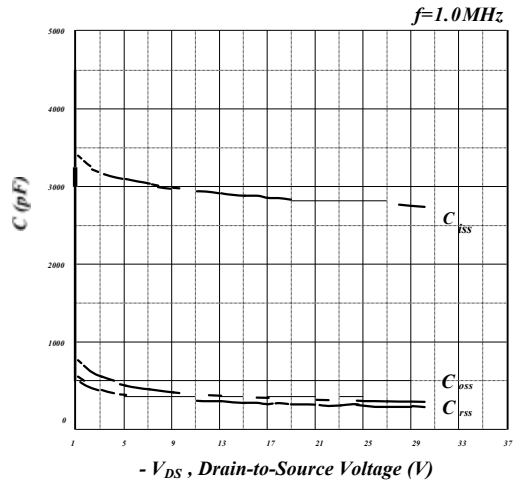
Fig 7. Gate Charge Characteristics
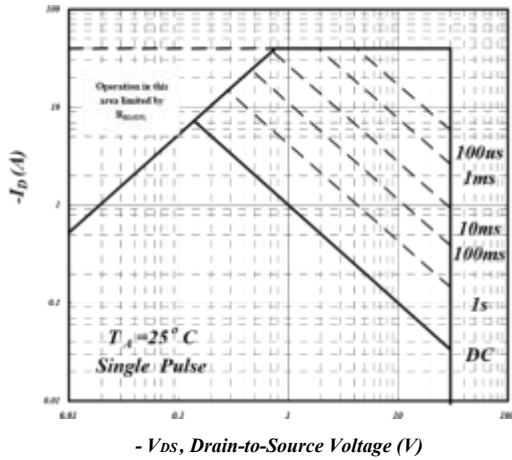
Fig 8. Typical Capacitance Characteristics

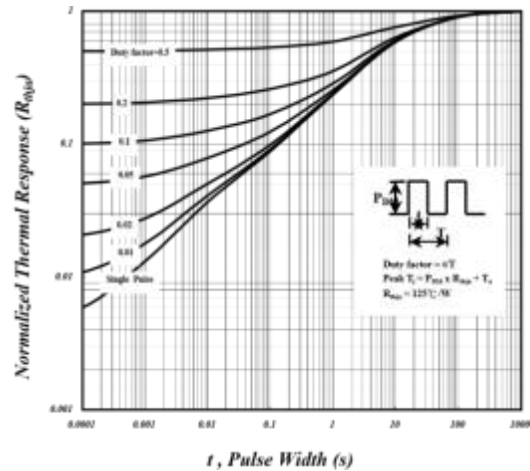Fig 9. Maximum Safe Operating Area

Fig 10. Effective Transient Thermal Impedance

Fig 11. Transfer Characteristics
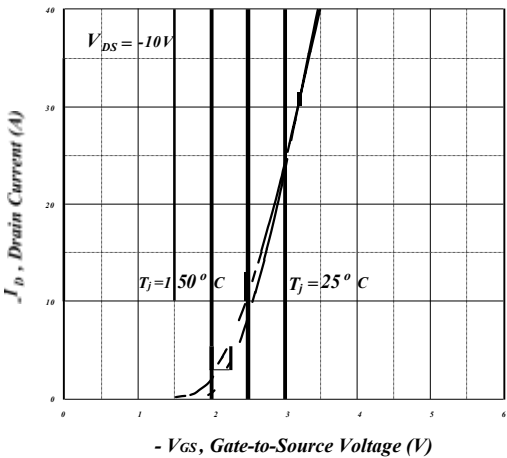
Fig 12. Drain Current v.s. Ambient Temperature
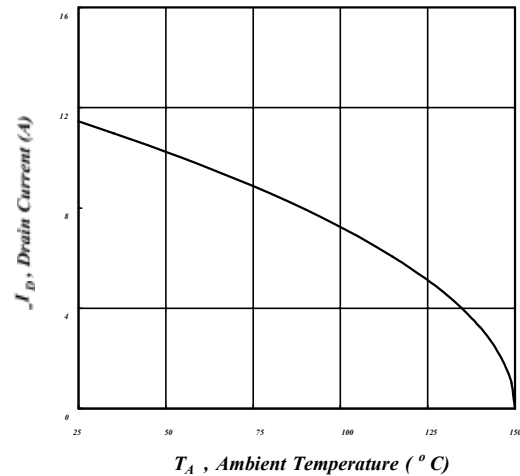
$I_D = -1mA$

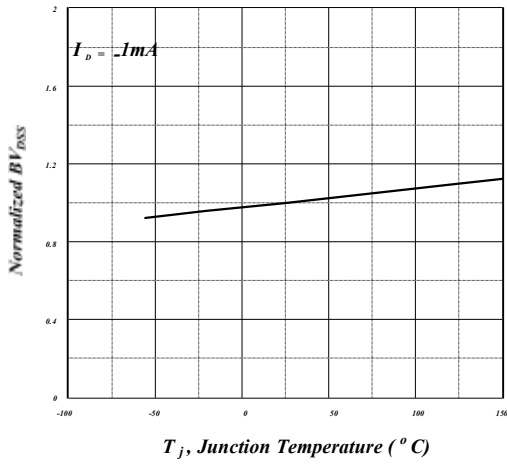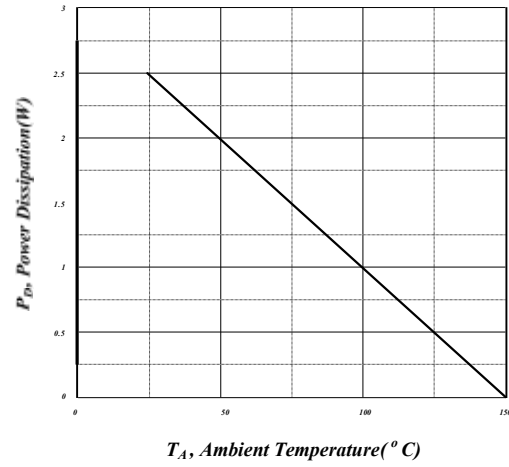Normalized BV_{DSS}

T_j, Junction Temperature (^{o}C)

Fig 13. Normalized BV$_{DSS}$ v.s. JunctionTemperature

P_D, Power Dissipation(W)

T_A, Ambient Temperature(^{o}C)

Fig 14. Total Power Dissipation

$T_j = 25\ ^o C$

$R_{DS(ON)}(m\Omega)$
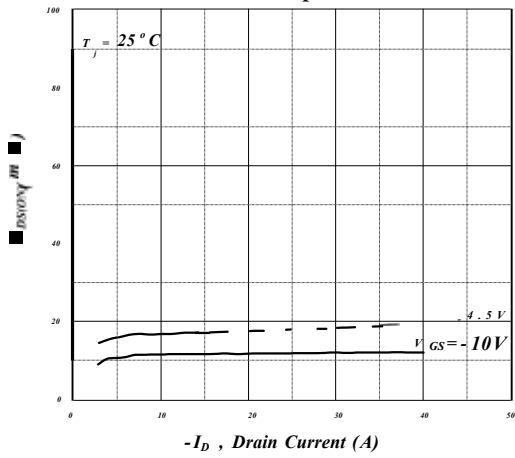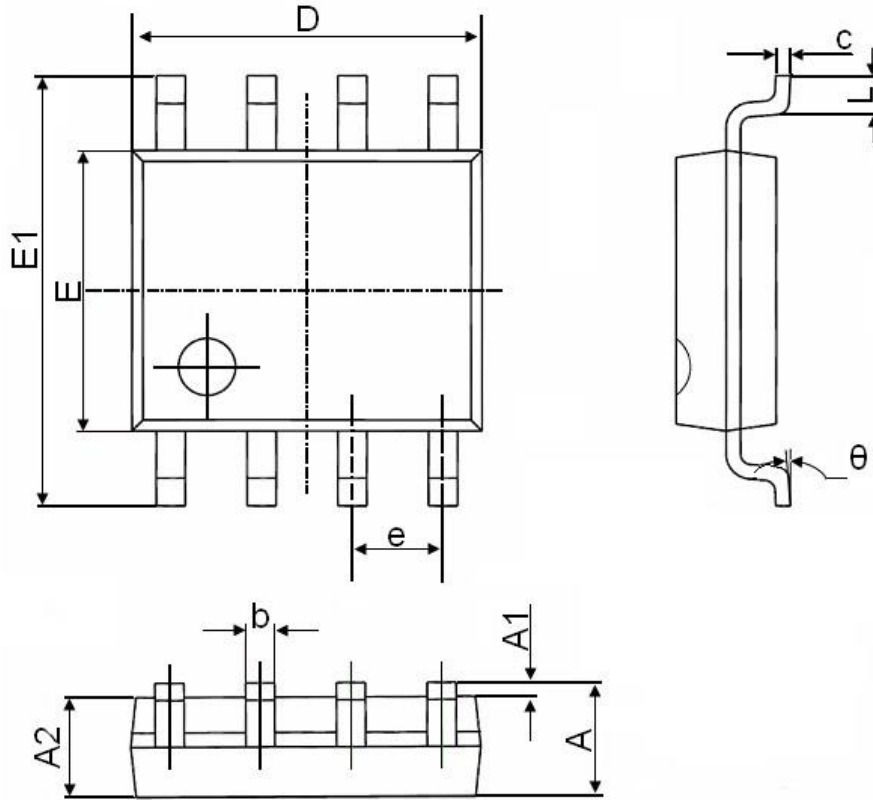
$4.5 V$

$V_{GS} = -10V$

$-I_D$, Drain Current (A)

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