

General Description

The MY4435 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.

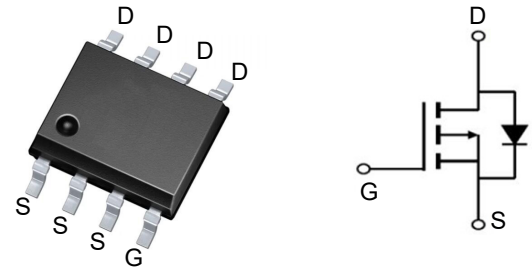


Features

V_{DSS}	-30	V
I_D	-15	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	12.5	$m\Omega$
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	22	$m\Omega$

Application

- Battery protection
- Load switch
- Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY4435	SOP-8	MY4435	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	-15	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	$V_{GS}=-10V, I_D=-10A$	-	12.5	15	m Ω
		$V_{GS}=-4.5V, I_D=-6A$	-	22	26	m Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.2	-1.6	-2	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		-	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	$I_S=-10A, V_{GS}=0V, di/dt=100A/\mu s$	-	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

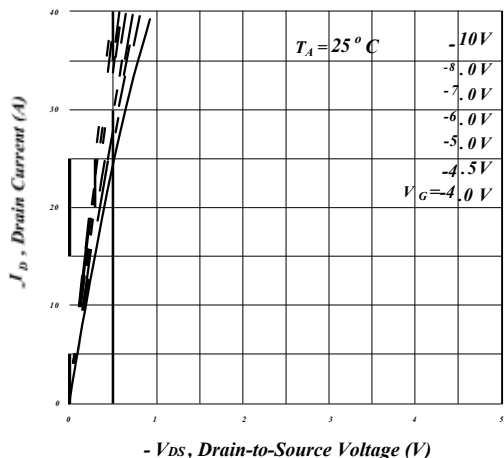


Fig 1. Typical Output Characteristics

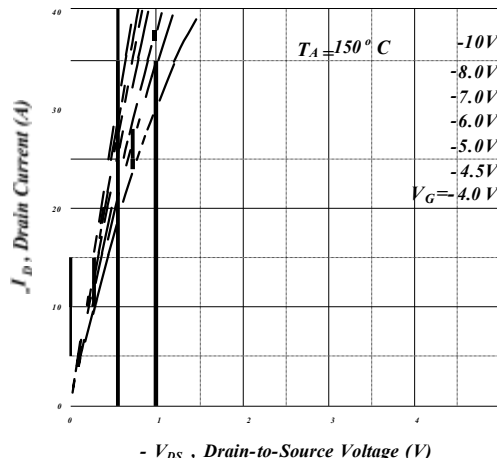


Fig 2. Typical Output Characteristics

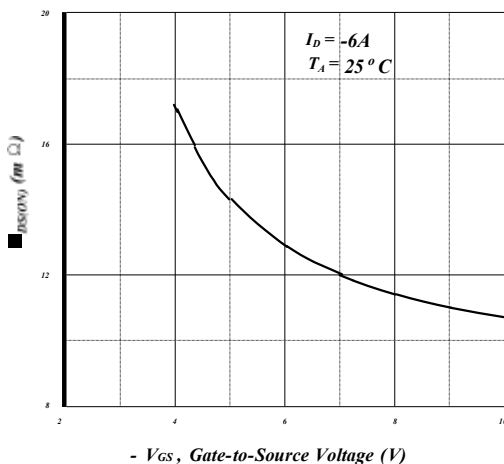


Fig 3. On-Resistance v.s. Gate Voltage

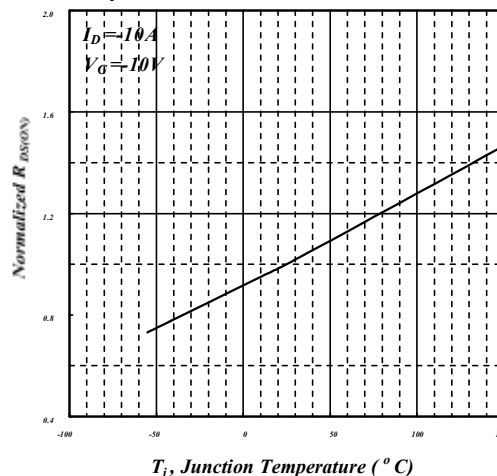
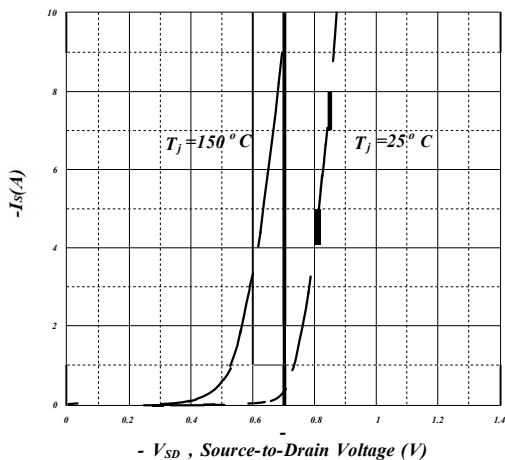


Fig 4. Normalized On-Resistance v.s. Junction Temperature



Reverse Diode

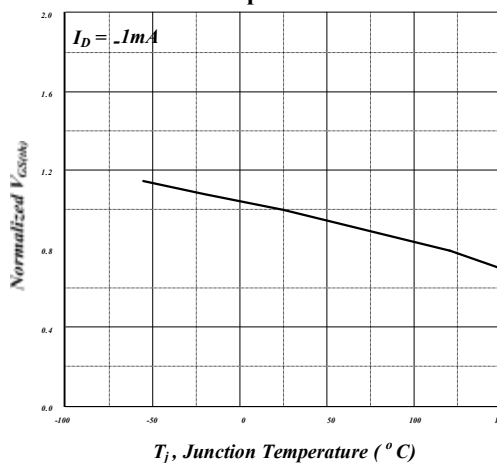


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

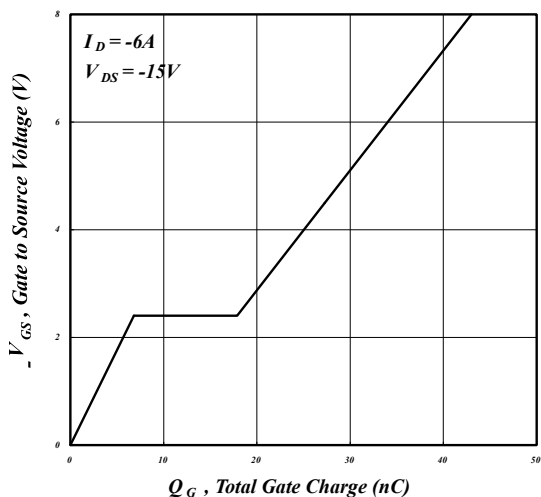


Fig 7. Gate Charge Characteristics

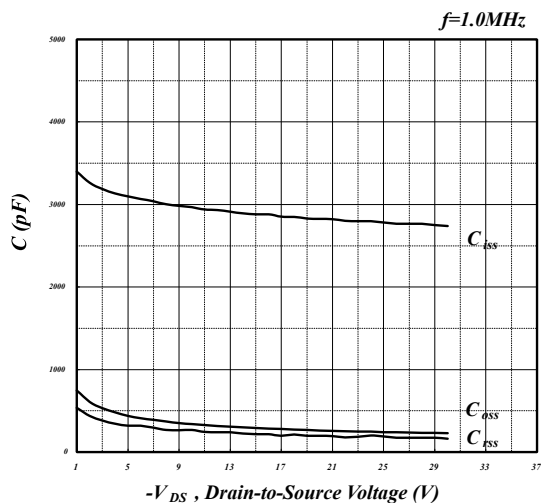


Fig 8. Typical Capacitance Characteristics

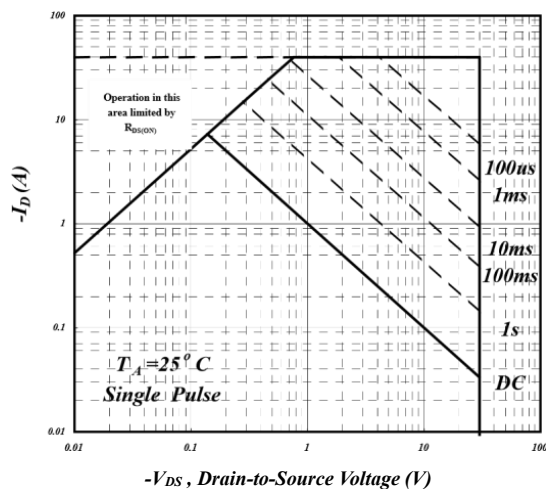


Fig 9. Maximum Safe Operating Area

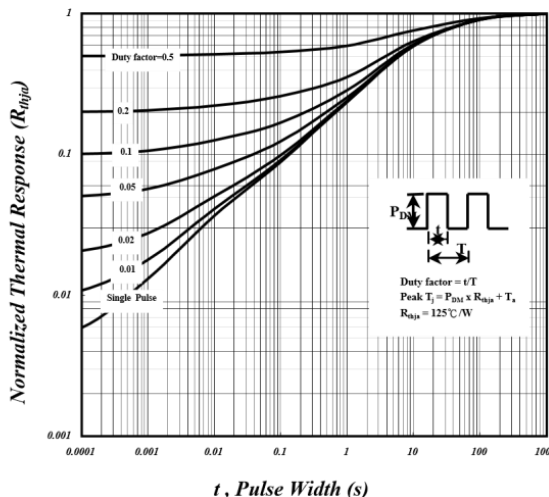


Fig 10. Effective Transient Thermal Impedance

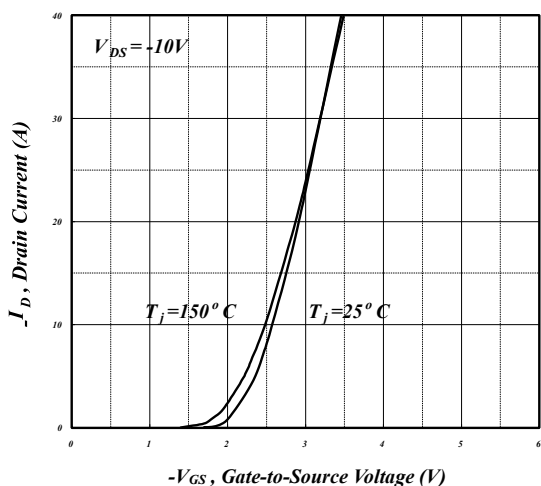


Fig 11. Transfer Characteristics

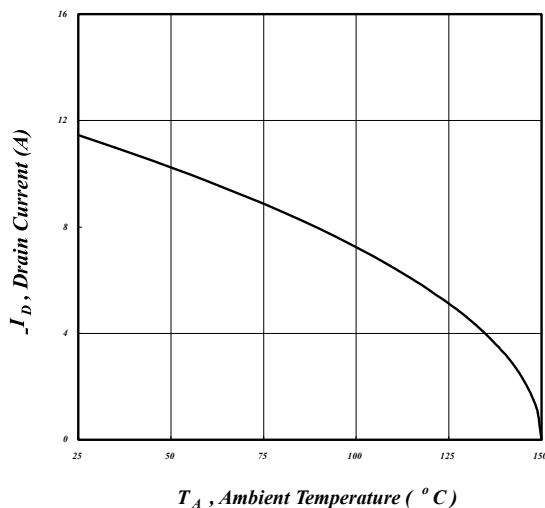


Fig 12. Drain Current v.s. Ambient Temperature

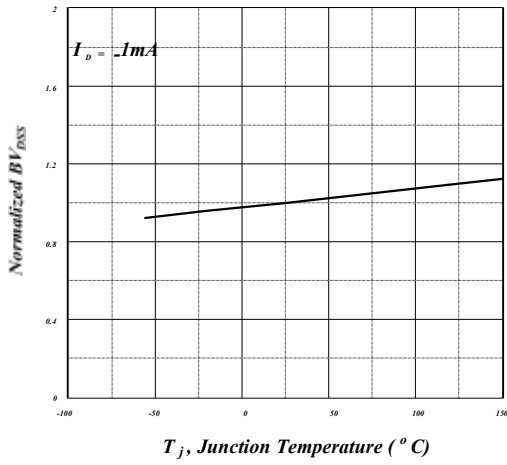


Fig 13. Normalized BV_{DSS} v.s. Junction Temperature

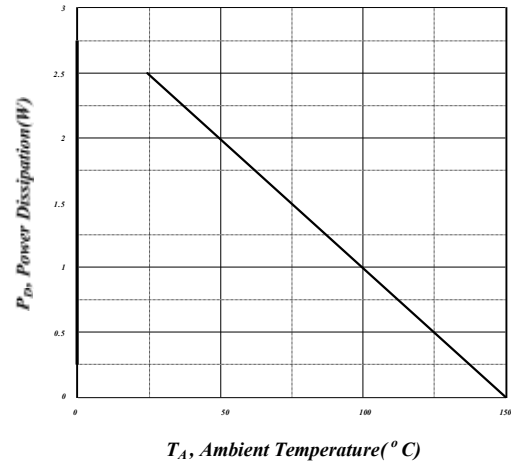


Fig 14. Total Power Dissipation

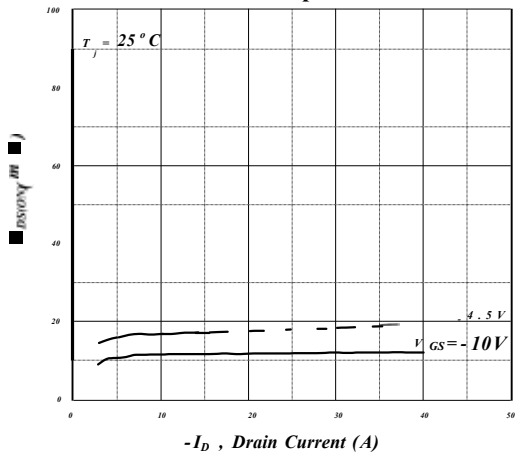
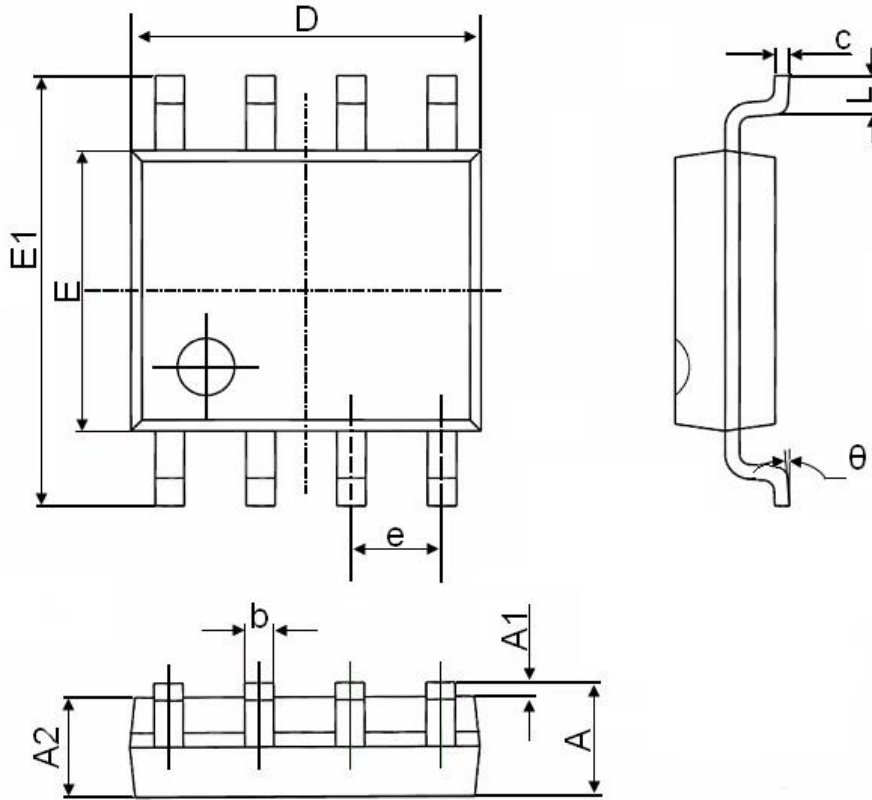


Fig 15. Typ. Drain-Source on State Resistance

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