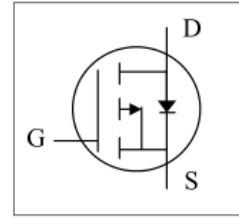


**30V P-Channel Enhancement Mode MOSFET**

**Description**

The AO4435 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.



**General Features**

$V_{DS} = -30V$   $I_D = -12A$

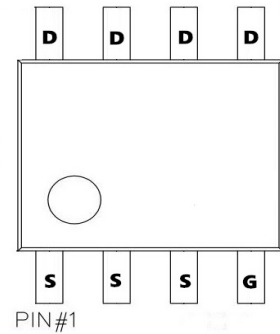
$R_{DS(ON)} < 20m\Omega @ V_{GS}=10V$

**Application**

Battery protection

Load switch

Uninterruptible power supply



**Absolute Maximum Ratings (Tc=25°C unless otherwise noted )**

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	- 30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D@T_A=25^\circ C$	Drain Current <sup>3</sup> , $V_{GS} @ 10V$	-12	A
$I_D@T_A=70^\circ C$	Drain Current <sup>3</sup> , $V_{GS} @ 10V$	-10	A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	-50	A
$P_D@T_A=25^\circ C$	Total Power Dissipation	2.5	W
	Linear Derating Factor	0.02	W/°C
$T_{STG}$	Storage Temperature Range	-55 to 150	°C
$T_J$	Operating Junction Temperature Range	-55 to 150	°C
$R_{thj-a}$	Maximum Thermal Resistance, Junction-ambient <sup>3</sup>	50	°C/W

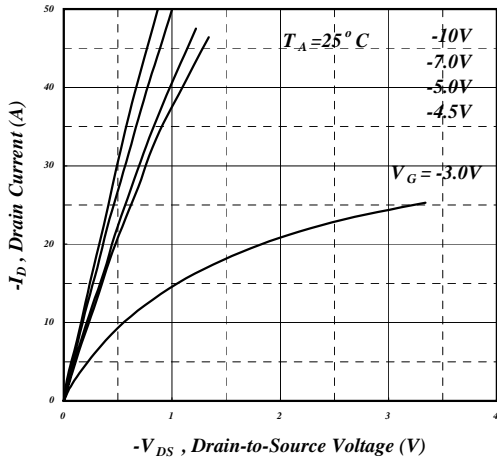
**30V P-Channel Enhancement Mode MOSFET**
**Electrical Characteristics@T<sub>j</sub>=25°C(unless otherwise specified)**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-30	-	-	V
RDS(ON)	Static Drain-Source On-Resistance <sup>2</sup>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-7A	-	15	20	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-5A	-	25	32	mΩ
VGS(th)	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-1	-	-3	V
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =-10V, I <sub>D</sub> =-7A	-	16	-	S
IDSS	Drain-Source Leakage Current	V <sub>DS</sub> =-24V, V <sub>GS</sub> =0V	-	-	-30	uA
IGSS	Gate-Source Leakage	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA
Q <sub>g</sub>	Total Gate Charge	I <sub>D</sub> =-7A	-	18	29	nC
Q <sub>gs</sub>	Gate-Source Charge	V <sub>DS</sub> =-24V	-	3	-	nC
Q <sub>gd</sub>	Gate-Drain ("Miller") Charge	V <sub>GS</sub> =-4.5V	-	10	-	nC
td(on)	Turn-on Delay Time	V <sub>DS</sub> =-15V	-	8	-	ns
t <sub>r</sub>	Rise Time	I <sub>D</sub> =-1A	-	6.6	-	ns
td(off)	Turn-off Delay Time	R <sub>G</sub> =3.3Ω	-	44	-	ns
t <sub>f</sub>	Fall Time	V <sub>GS</sub> =-10V	-	34	-	ns
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V	-	1175	1690	pF
C <sub>oss</sub>	Output Capacitance	V <sub>DS</sub> =-25V	-	195	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance	f=1.0MHz	-	190	-	pF
V <sub>SD</sub>	Forward On Voltage <sup>2</sup>	I <sub>S</sub> =-2.1A, V <sub>GS</sub> =0V	-	-	-1.2	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>S</sub> =-7A, V <sub>GS</sub> =0V, dI/dt=100A/μs	-	28	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge		-	18	-	nC

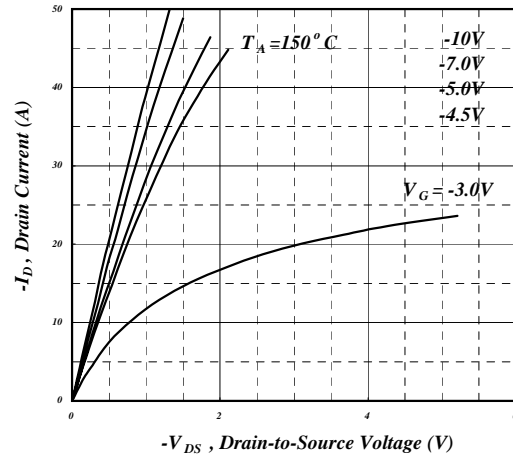
**Notes:**

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board, t<sub>l</sub>≤10sec ; 125 °C/W when mounted on Min. cop

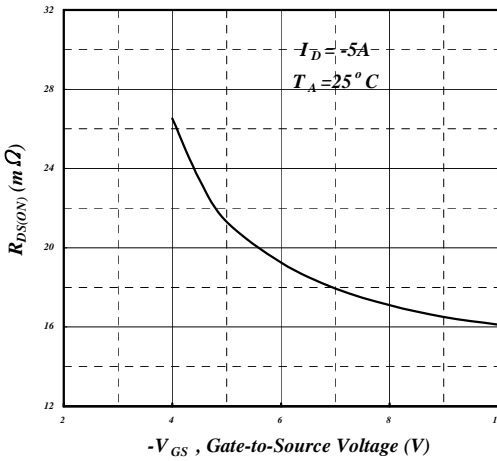
**30V P-Channel Enhancement Mode MOSFET**



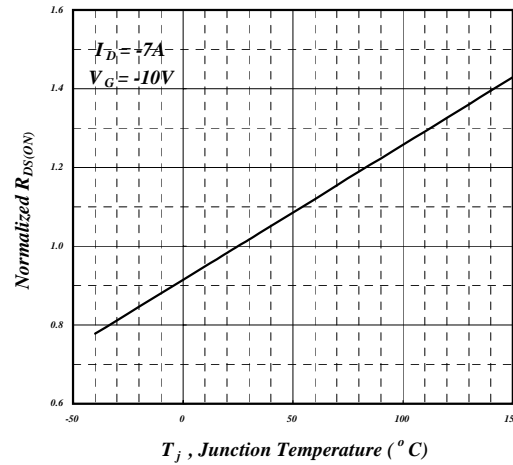
**Fig 1. Typical Output Characteristics**



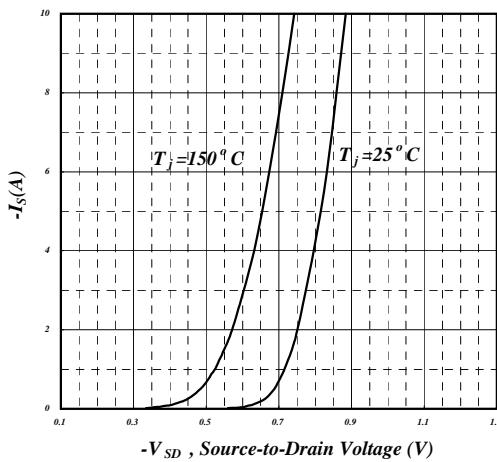
**Fig 2. Typical Output Characteristics**



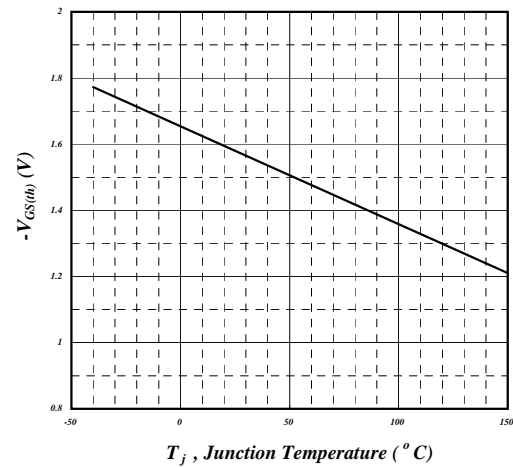
**Fig 3. On-Resistance v.s. Gate Voltage**



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

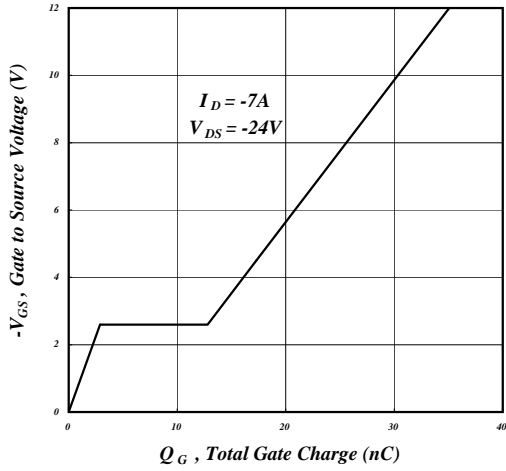


**Fig 5. Forward Characteristic of Reverse Diode**

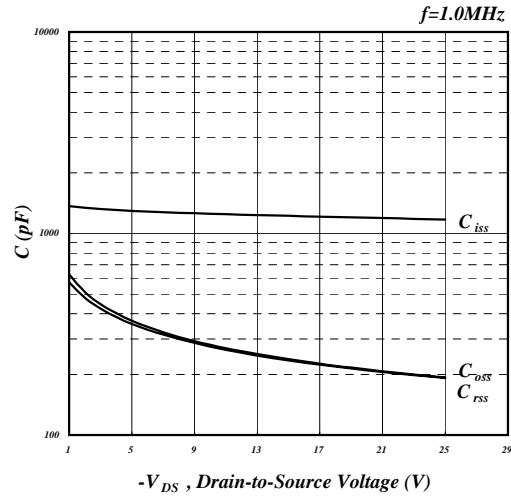


**Fig 6. Gate Threshold Voltage v.s. Junction Temperature**

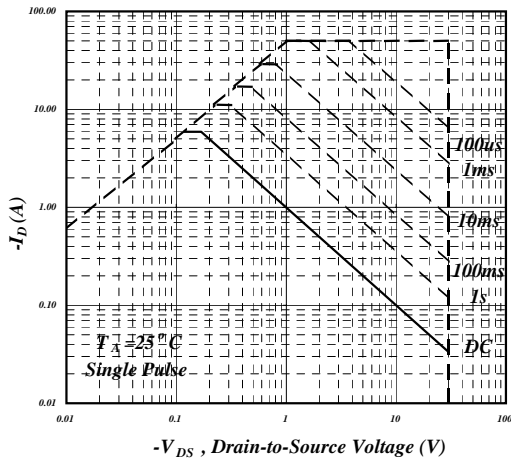
**30V P-Channel Enhancement Mode MOSFET**



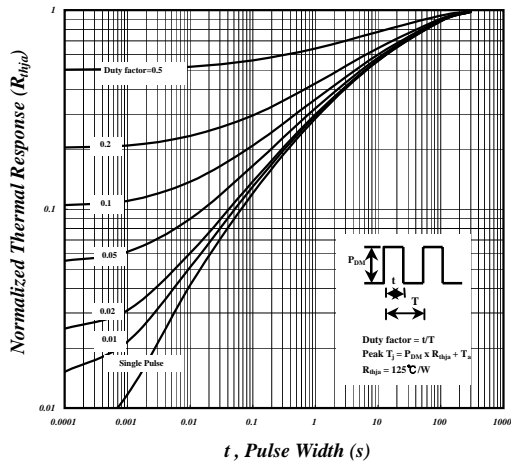
**Fig 7. Gate Charge Characteristics**



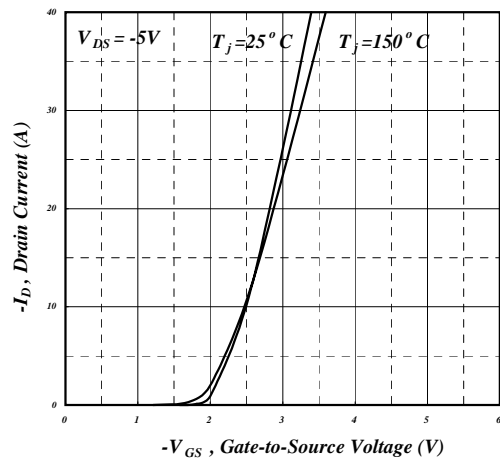
**Fig 8. Typical Capacitance Characteristics**



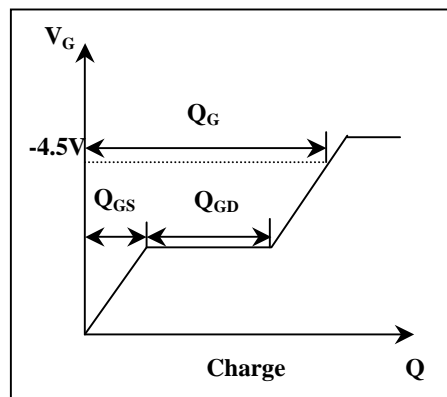
**Fig 9. Maximum Safe Operating Area**



**Fig 10. Effective Transient Thermal Impedance**

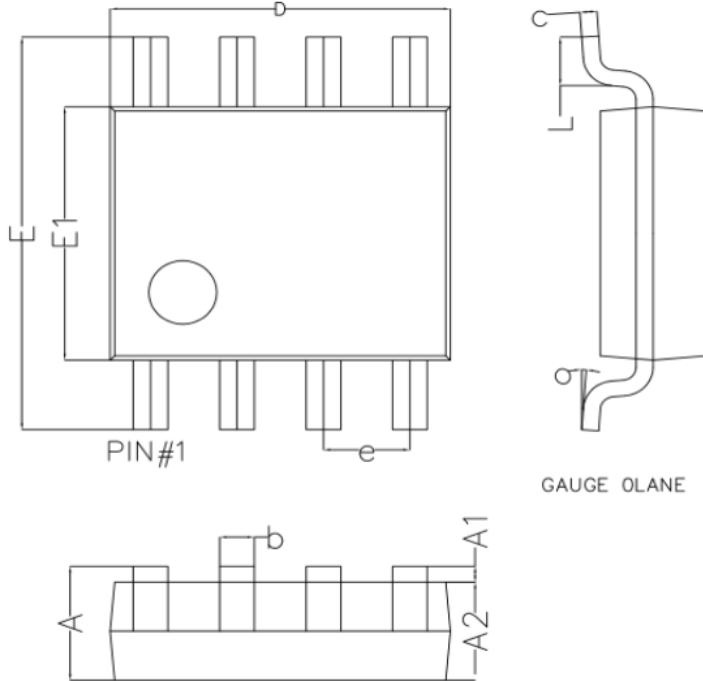


**Fig 11. Transfer Characteristics**



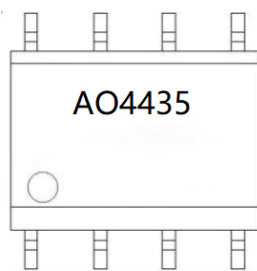
**Fig 12. Gate Charge Circuit**

**SOP8 Package outline**



Symbol	Dim in mm		
	Min	Nor	Max
A	1.350	1.550	1.750
A1	0.100	0.175	0.250
A2	1.350	1.450	1.550
b	0.330	0.420	0.510
c	0.170	0.210	0.250
D	4.800	4.900	5.000
e	1.270 (BSC)		
E	5.800	6.000	6.200
E1	3.800	3.900	4.000
L	0.400	0.835	1.2700
o	0°	4°	8°

**Marking**



("xxxx"代表年份周期)

**Ordering information**

Order code	Package	Baseqty	Deliverymode
AO4435	SOP-8	3000	Tape and reel