

TDSEMIC

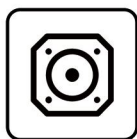
拓電半導體

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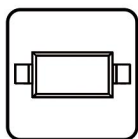
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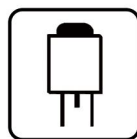
電源管理



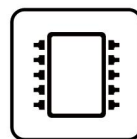
顯示驅動



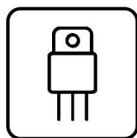
二三極管



LDO穩壓器



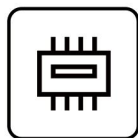
觸摸芯片



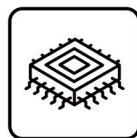
MOS管



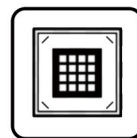
運算放大器



存儲芯片



MCU



串口通信

A04485-TD

產品規格說明書

AO4485-TD -40V P-Channel Enhancement Mode MOSFET

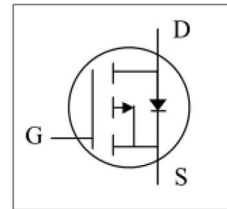
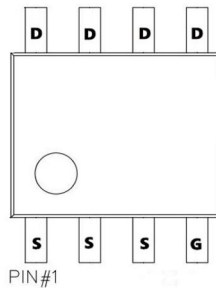
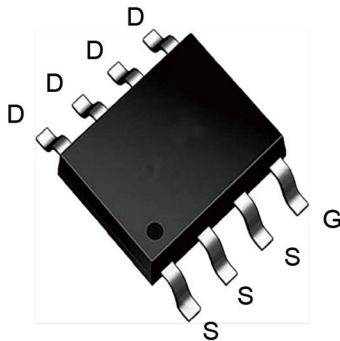
The JCW015EPC uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

$V_{DS} = -40V$ $I_D = -12A$
 $R_{DS(ON)} < 15m\Omega$ @ $V_{GS}=10V$
 $R_{DS(ON)} < 20m\Omega$ @ $V_{GS}=4.5V$

Application

Battery protection
 Load switch
 Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Package	Marking	QTY(PCS)	Packing method
AO4485-TD	SOP-8L	AO4485-TD	3000	Reel

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-40	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current, V_{GS} @ -10V ¹	-12	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current, V_{GS} @ -10V ¹	-10	A
$I_D@T_A=25^\circ\text{C}$	Continuous Drain Current, V_{GS} @ -10V ¹	-10	A
$I_D@T_A=70^\circ\text{C}$	Continuous Drain Current, V_{GS} @ -10V ¹	-8	A
I_{DM}	Pulsed Drain Current ²	-105	A
EAS	Single Pulse Avalanche Energy ³	146	mJ
I_{AS}	Avalanche Current	-54	A
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation ⁴	52.1	W
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation ⁴	2	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	62	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	2.4	$^\circ\text{C/W}$

AO4485-TD -40V P-Channel Enhancement Mode MOSFET

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=-250\mu A$	-40	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to 25°C , $I_D=-1mA$	---	-0.023	---	$V/^\circ\text{C}$
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=-10V$, $I_D=-12A$	---	---	15	$m\Omega$
		$V_{GS}=-4.5V$, $I_D=-10A$	---	---	20	
$V_{GS(th)}$	Gate Threshold Voltage		-1.0	-1.6	-2.5	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient	$V_{GS}=V_{DS}$, $I_D=-250\mu A$	---	4.74	---	$mV/^\circ\text{C}$
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-32V$, $V_{GS}=0V$, $T_J=25^\circ\text{C}$	---	---	1	μA
		$V_{DS}=-32V$, $V_{GS}=0V$, $T_J=55^\circ\text{C}$	---	---	5	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=-5V$, $I_D=-18A$	---	24	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1MHz$	---	7	14	
Q_g	Total Gate Charge (-4.5V)		---	27.9	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=-20V$, $V_{GS}=-4.5V$, $I_D=-12A$	---	7.7	---	
Q_{gd}	Gate-Drain Charge		---	7.5	---	
$T_{d(on)}$	Turn-On Delay Time		---	40	---	ns
T_r	Rise Time	$V_{DD}=-15V$, $V_{GS}=-10V$, $R_G=3.3$,	---	35.2	---	
$T_{d(off)}$	Turn-Off Delay Time	$I_D=-1A$	---	100	---	
T_f	Fall Time		---	9.6	---	
C_{iss}	Input Capacitance		---	3500	---	pF
C_{oss}	Output Capacitance	$V_{DS}=-15V$, $V_{GS}=0V$, $f=1MHz$	---	323	---	
C_{rss}	Reverse Transfer Capacitance		---	222	---	
I_S	Continuous Source Current ^{1,5}		---	---	-52	A
I_{SM}	Pulsed Source Current ^{2,5}	$V_G=V_D=0V$, Force Current	---	---	-105	A
V_{SD}	Diode Forward Voltage ²	$V_{GS}=0V$, $I_S=-1A$, $T_J=25^\circ\text{C}$	---	---	-1	V

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.The EAS data shows Max. rating . The test condition is $V_{DD}=-25V$, $V_{GS}=-10V$, $L=0.1mH$, $I_{AS}=-54A$
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

AO4485-TD -40V P-Channel Enhancement Mode MOSFET

Typical Characteristics

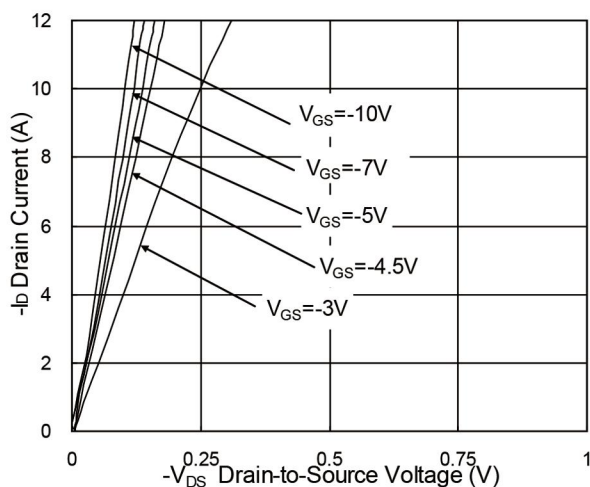


Fig.1 Typical Output Characteristics

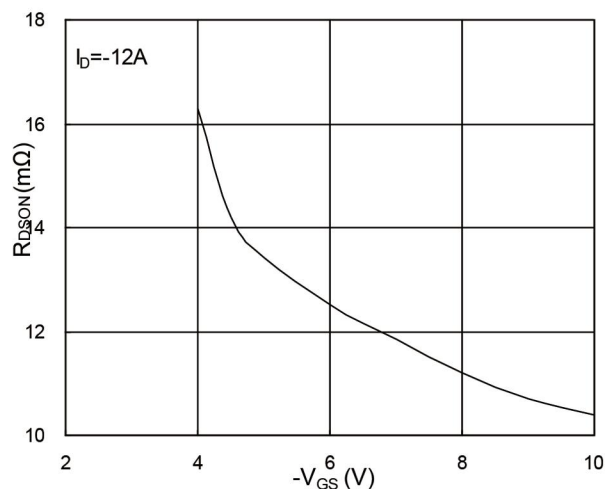


Fig.2 On-Resistance v.s Gate-Source

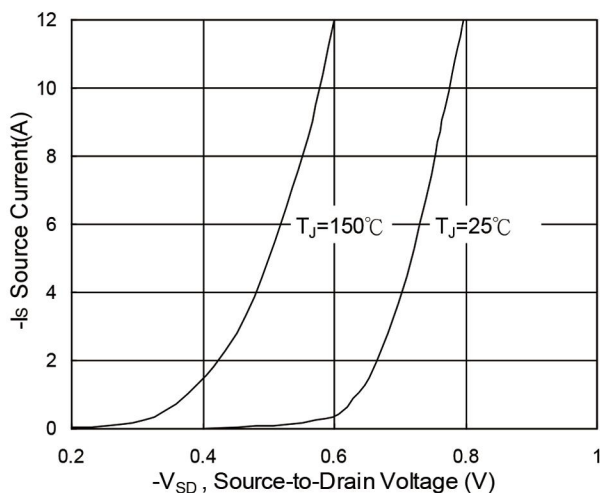


Fig.3 Forward Characteristics Of Reverse

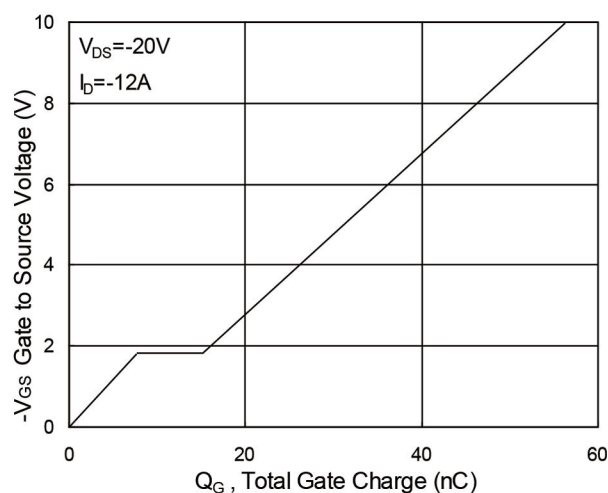


Fig.4 Gate-Charge Characteristics

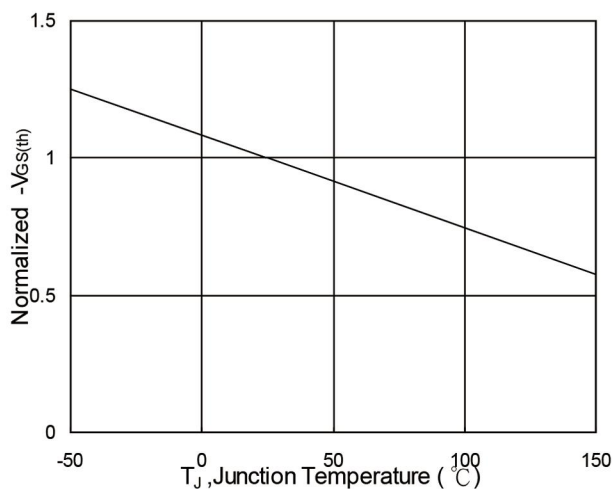


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

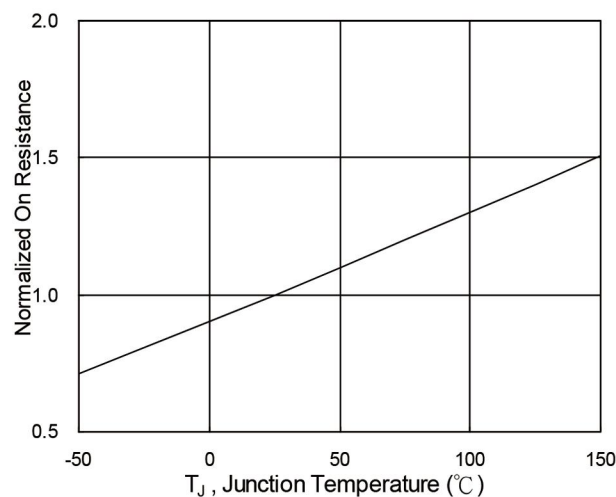


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

AO4485-TD -40V P-Channel Enhancement Mode MOSFET

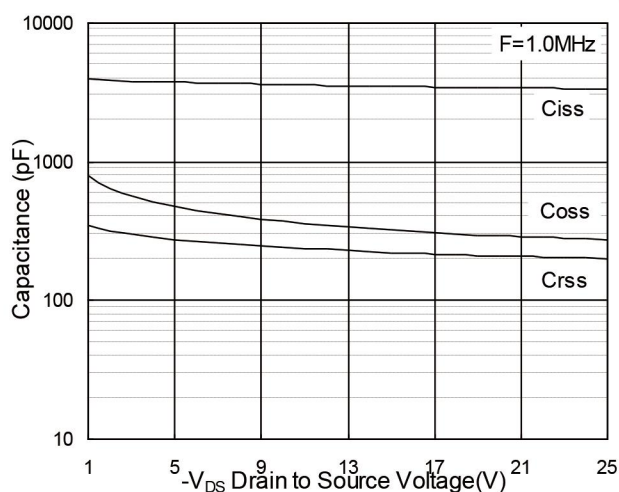


Fig.7 Capacitance

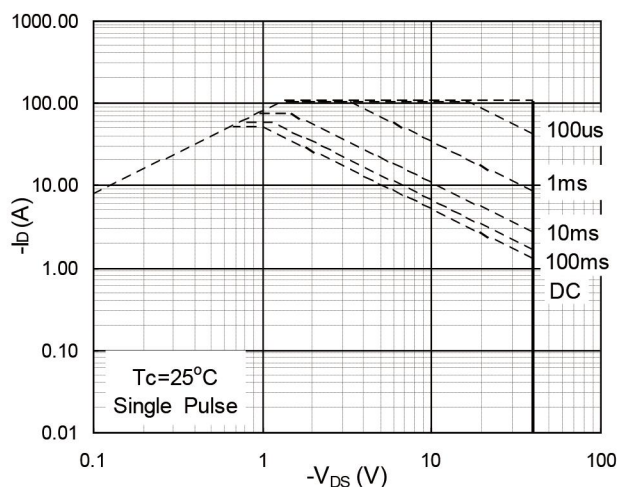


Fig.8 Safe Operating Area

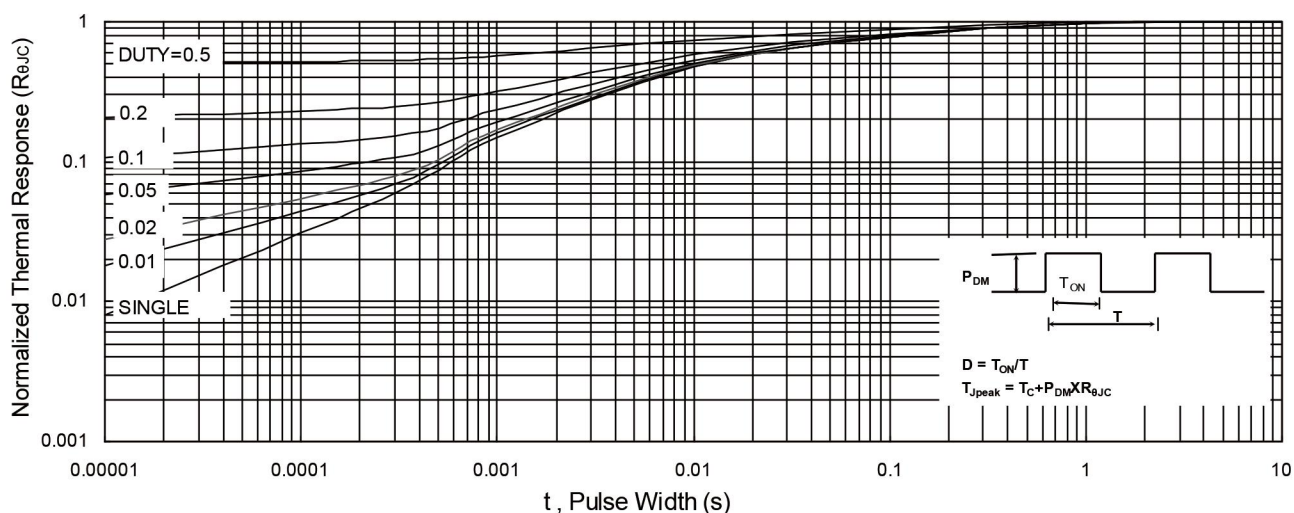


Fig.9 Normalized Maximum Transient Thermal Impedance

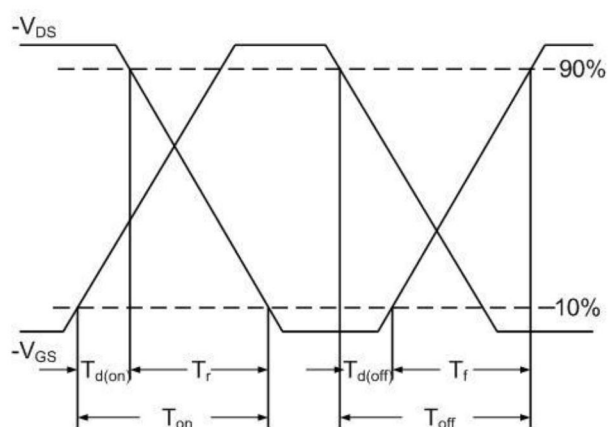


Fig.10 Switching Time Waveform

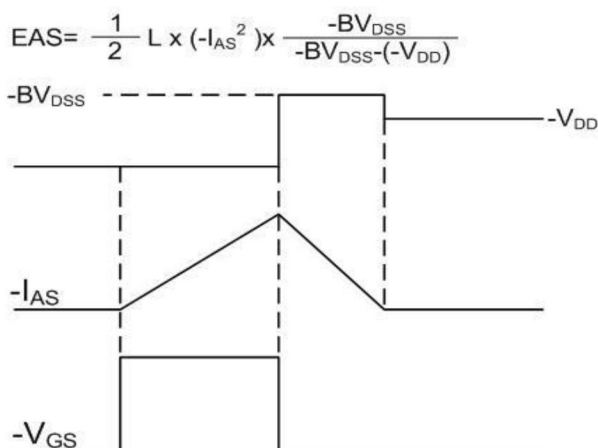
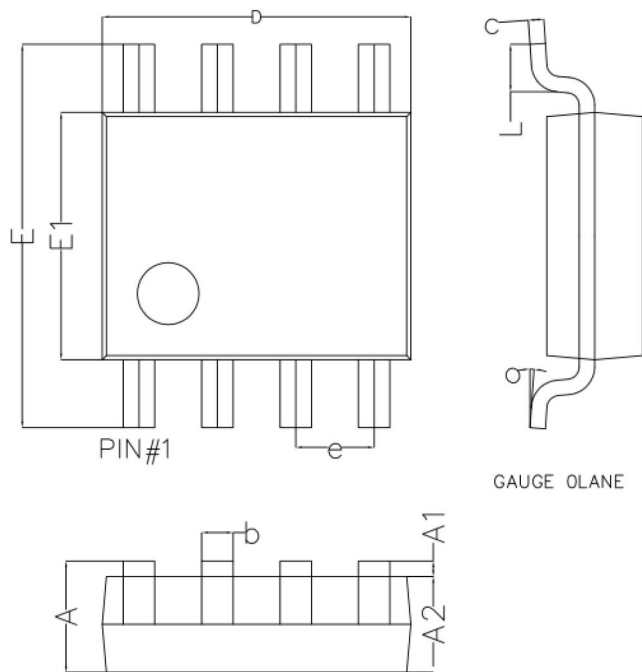


Fig.11 Unclamped Inductive Waveform

PACK SOP-8

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°