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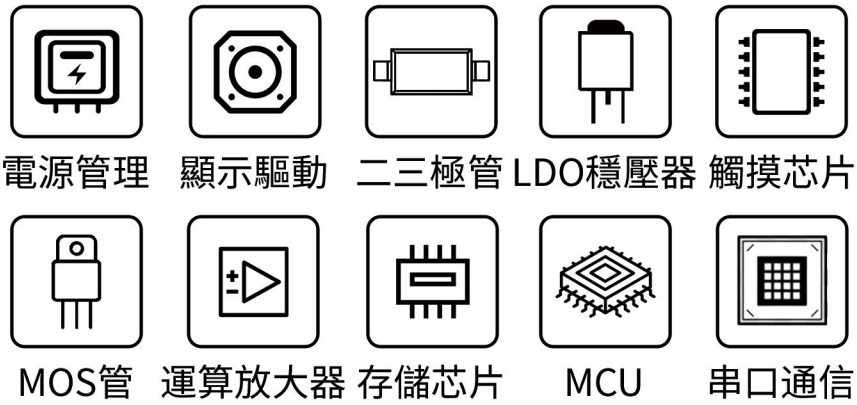


A04409-TD

產品規格說明書

General Description:

The AO4409-TD is the single P-Channel logic enhancement mode power field effect transistors to provide excellent RDS(on),low gate charge and low gate resistance.It's up to -30V operation voltage is well suited in switching mode power supply,SMPS, notebook computer power management and other battery powered circuits.

Features:

RDS(ON)<7.5m @VGs=10V (P-Ch)

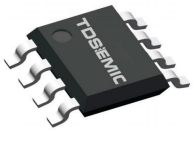
RDS(ON)<13 m @VGs=4.5V(P-Ch)

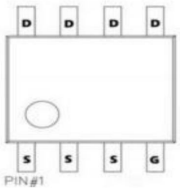
Super high density cell design for extremely low RDS(ON)Exceptional on-resistance and maximum DC current

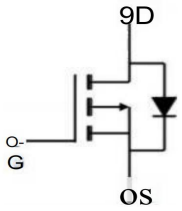
Applications

Switching power supply,SMPS
Battery Powered System
DC/DC Converter
DC/AC Converter
Load Switch

SOP-8 Pin Configuration







Package Marking and Ordering Information

Product ID	Package	Marking	QTY(PCS)	Packing methed
AO4409-TD	SOP-8	AO4409-TD	3000	Reel

Absolute Maximum Ratings(TC=25℃unless otherwise specified)

Symbol	Parameter	Rating	Units
Vos	Drain-Source Voltage	-30	V
VGs	Gate-Source Voltage	±20	V
lo@Tc=25℃	Continuous Drain Current,Vss@-10V1.6	-18	A
1D@Tc=100℃	Continuous Drain Current,Vss@-10V1.6	-8.8	A
IDM	Pulsed Drain Current²	-53	A
EAS	Single Pulse Avalanche Energy³	-80	mJ
IAs	Avalanche Current	-40	A
Po@Tc=25℃	Total Power Dissipation⁴	90	W
TsTG	Storage Temperature Range	-55 to 175	℃
TJ	Operating Junction Temperature Range	-55 to 175	℃
ReJA	Thermal Resistance Junction-ambient1(t≤10S)	20	℃N
	Thermal Resistance Junction-ambient¹(Steady State)	50	℃N

ReJC	Thermal Resistance Junction-case 1	1.6	℃N

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BVoss	Drain-Source Breakdown Voltage	Vgs=0V, lp=-250uA	-30	____	----	V
RDS(ON)	Static Drain-Source On-Resistance²	VGs=-10V, Ip=-20A	----	5.6	7.5	mΩ
		VGs=-4.5V, b=-15A	---	9.5	13	mΩ
VGs(th)	Gate Threshold Voltage	Vcs=Vos, lo =-250uA	-1.2	___	-2.5	V
loss	Drain-Source Leakage Current	Vos=-24V, Vss=0V, TJ=25℃	---	____	-1	uA
		Vos=-24V, VGs=0V, TJ=55℃	---	__	-5	
Icss	Gate-Source Leakage Currentt	VGs=±20V, Vos=0V	----	____	±100	nA
Rg	Gate Resistance	Vos=0V, VGs=0V, f=1MHz	----	1.2	---	Ω
Qg	Total Gate Charge(-10V)	Vos=-15V, Vss=-10V, lb=-18A	---	60	----	nC
Qgs	Gate-Source Charge		---	9	----	
Qgd	Gate-Drain Charge		----	15	----	
Td(on)	Turn-On Delay Time	VDD=-15V , VGs=-10V RG=3.3 , lb=-20A	---	17	_____	ns
Tr	Rise Time		----	40	---	
Td(of)	Turn-Off Delay Time		----	55	----	
Tt	FallTime		----	13	---	
Ciss	lnput Capacitance	Vos=-25V, Vgs=0V, f=1MHz	----	3450	----	pF
Coss	Output Capacitance		---	255	----	
Crss	Reverse Transfer Capacitance		---	140	---	
Is	Continuous Source Current1.5	Vg=Vp=0V, Force Current	---	____	-70	A
VsD	Diode Forward Voltage²	VGs=0V, Is=-1A, Tj=25℃	----	____	-1.2	V
trr	Reverse Recovery Time	IF=-20A, di/dt=100A/us, TJ=25℃	---	22	---	nS
Qm	Reverse Recovery Charge		---	72	----	nC

Note:
1.The data tested by surface mounted on a 1 inch²FR-4 board with 2OZ copper.
2.The data tested by pulsed,pulse width≤300us,duty cycle≤2%
3.The EAS data shows Max.rating.The test condition is VoD=-50V,Vgs=-10V,L=0.1mH,lAs=-40A
4.The power dissipation is limited by 150℃ junction temperature
5.The data is theoretically the same as lo and lom,in real applications,should be limited by total power dissipation
6.The maximum current rating is package limited.

Typical Characteristics

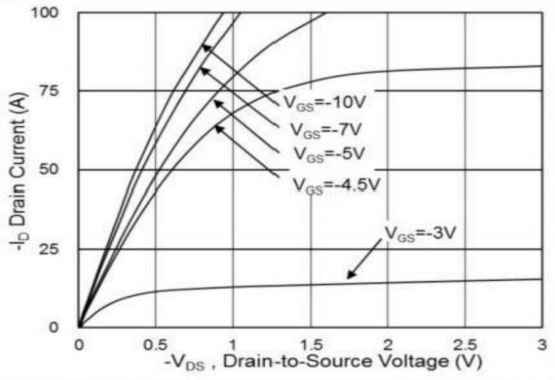


Fig.1 Typical Output Characteristics

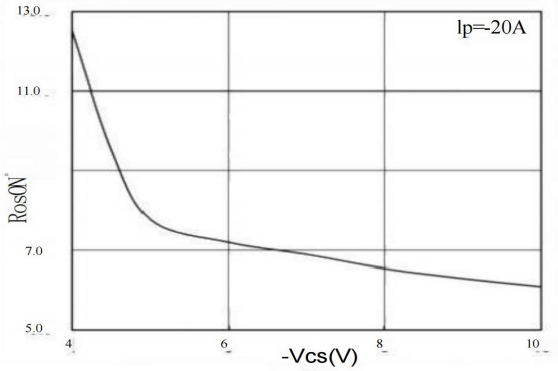


Fig.2 On-Resistance vs.Gate-Source Votage

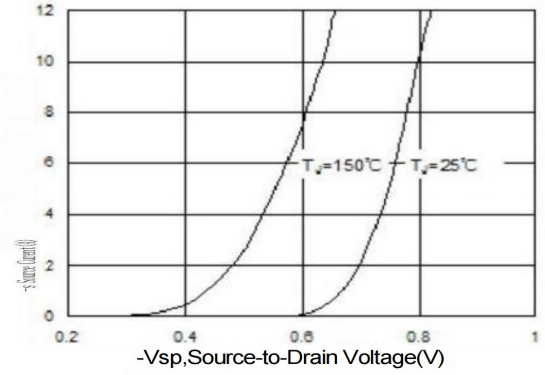


Fig.3 Forward Characteristics of Reverse

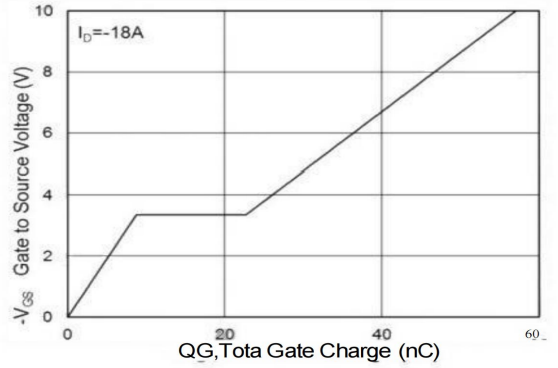


Fig.4 Gate-Charge Characteristics

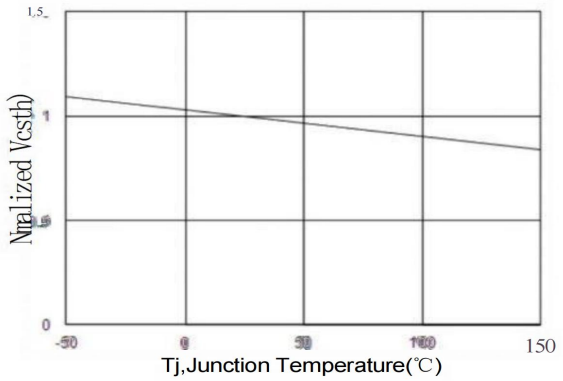


Fig.5 Normalized-VGs(th)vs.TJ

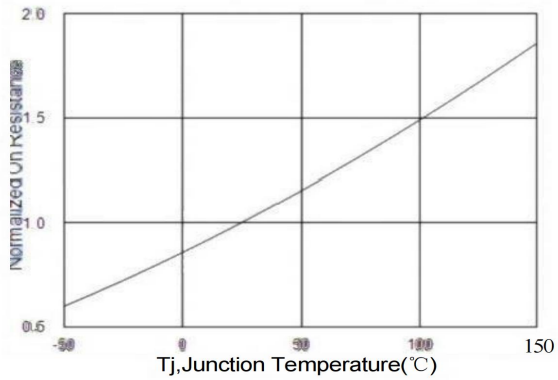


Fig.6 Normalized RosON vs.TJ

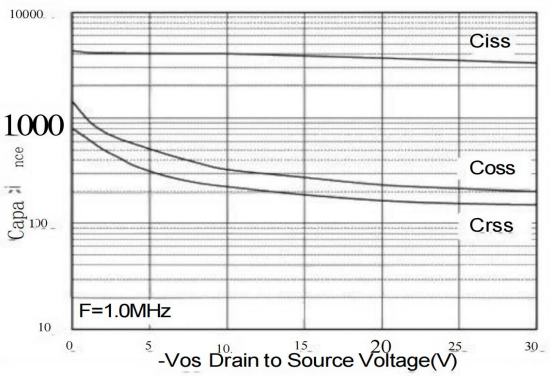


Fig.7 Capacitance

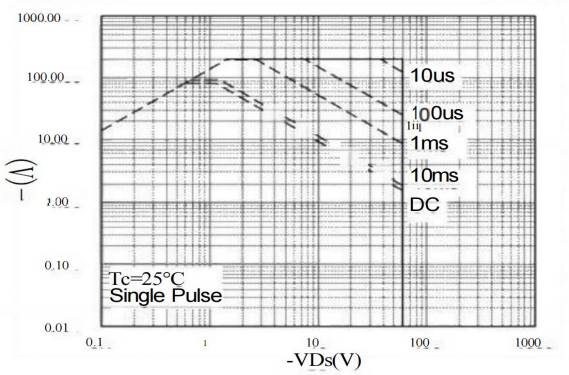


Fig.8 Safe Operating Area

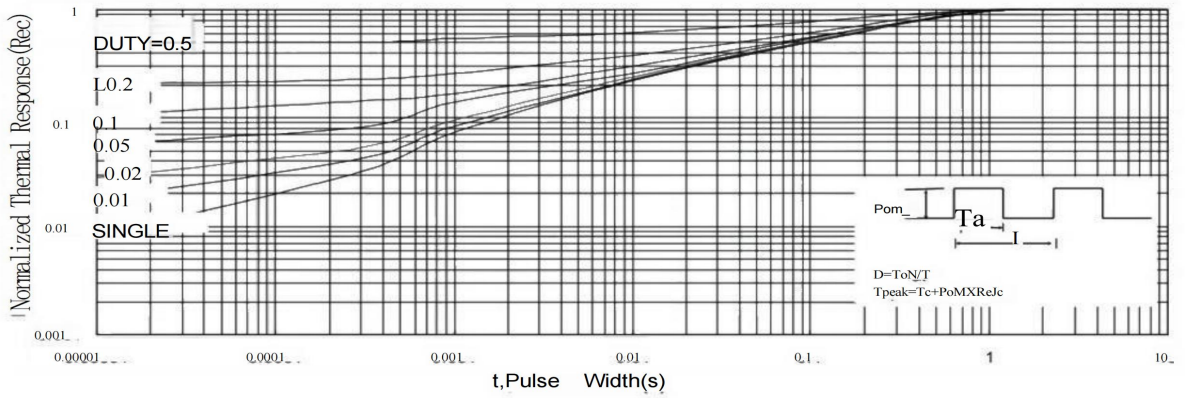


Fig.9 Normalized Maximum Transient Thermal Impedance

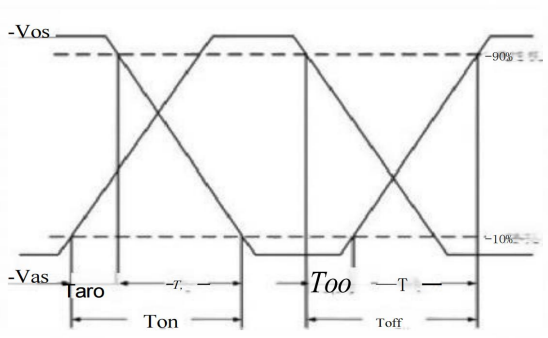


Fig.10 Switching Time Waveform

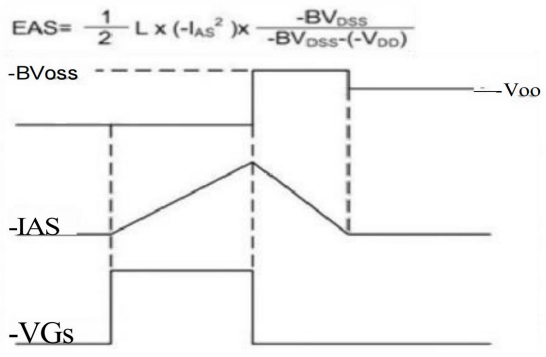
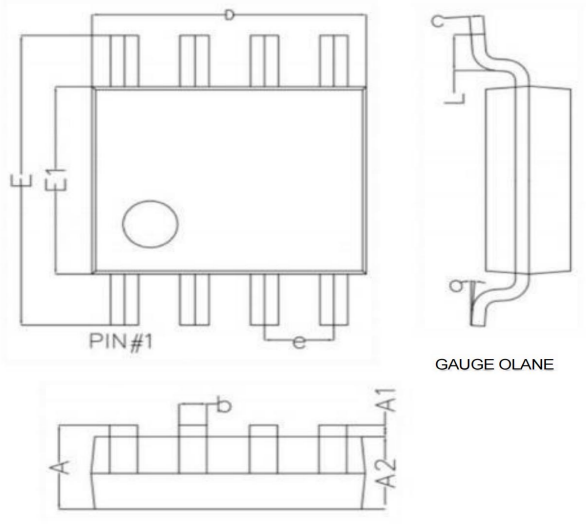


Fig.11 Unclamped Inductive Switching Waveform

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
θ	0°	4°	8°