

Features

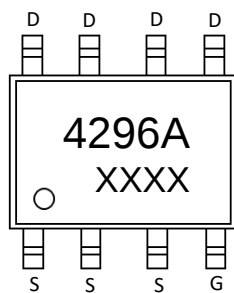
- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
100V	6.8mΩ@10V	13.5A
	8.0mΩ@4.5V	

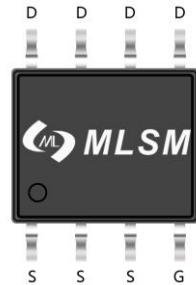
Application

- Power switching application

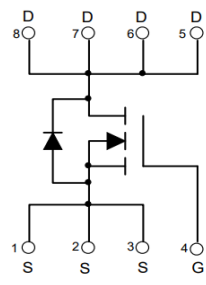


4296A: Device code
 XXXX : Code

Marking and pin assignment



SOP-8 top view



Schematic diagram



Halogen-Free

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

Symbol	Parameter	Rating	Unit
Common Ratings ($T_C=25^{\circ}\text{C}$ Unless Otherwise Noted)			
V_{DS}	Drain-Source Breakdown Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
T_J	Maximum Junction Temperature	150	$^{\circ}\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}\text{C}$
I_S	Diode Continuous Forward Current	$T_C=25^{\circ}\text{C}$ 13.5	A

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested	$T_C=25^{\circ}\text{C}$ 55	A
I_D	Continuous Drain Current	$T_C=25^{\circ}\text{C}$ 13.5	A
P_D	Maximum Power Dissipation	$T_C=25^{\circ}\text{C}$ 3.1	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	40	$^{\circ}\text{C/W}$

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MQ4296A	SOP-8	4296A	3,000	6,000	42,000	13"reel

Electrical Characteristics (TJ=25°C unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
BV _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	100	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V	--	--	1.0	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.3	--	2.3	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =13.5A	--	6.8	8.3	mΩ
		V _{GS} =4.5V, I _D =11.5A	--	8.0	10.6	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz	--	3130	--	pF
C _{OSS}	Output Capacitance		--	245	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	12.5	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =50V, I _D =13.5A, V _{GS} =10V	--	42	--	nC
Q _{gs}	Gate Source Charge		--	7.5	--	nC
Q _{gd}	Gate Drain Charge		--	4.5	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =50V, R _L =3.7Ω, V _{GS} =10V, R _G =3Ω	--	8	--	nS
t _r	Turn-on Rise Time		--	5	--	nS
t _{d(off)}	Turn-Off Delay Time		--	41	--	nS
t _f	Turn-Off Fall Time		--	7	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	Tj=25°C, Is=13.5A	--	--	1.2	V

Typical Operating Characteristics

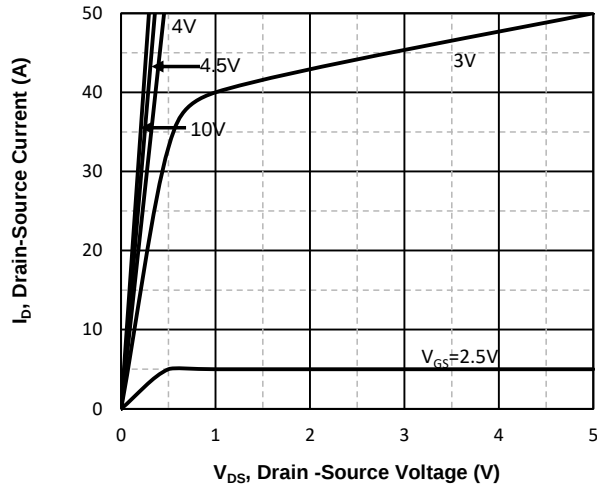


Fig1. Typical Output Characteristics

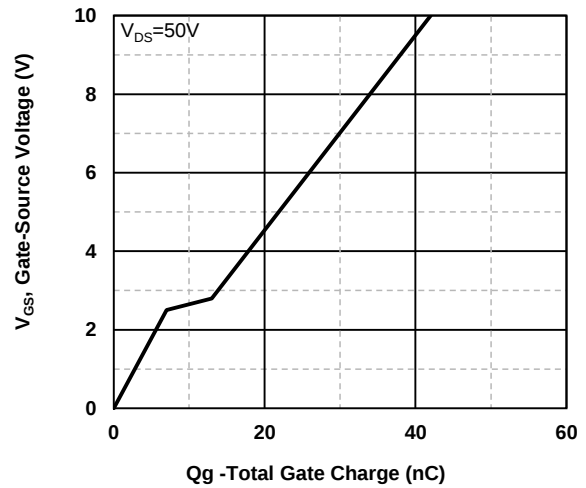


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

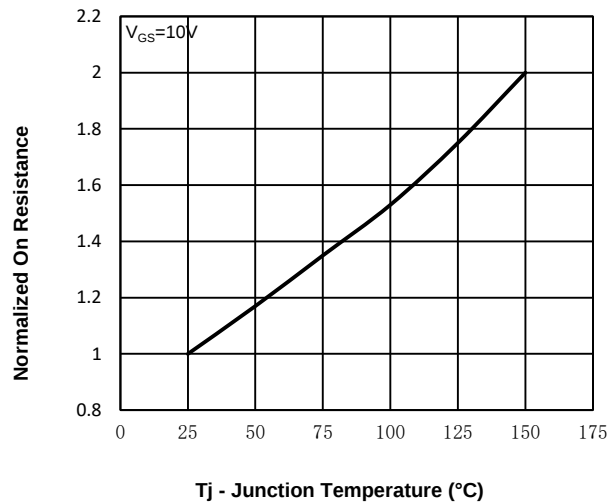


Fig3. Normalized On-Resistance Vs. Temperature

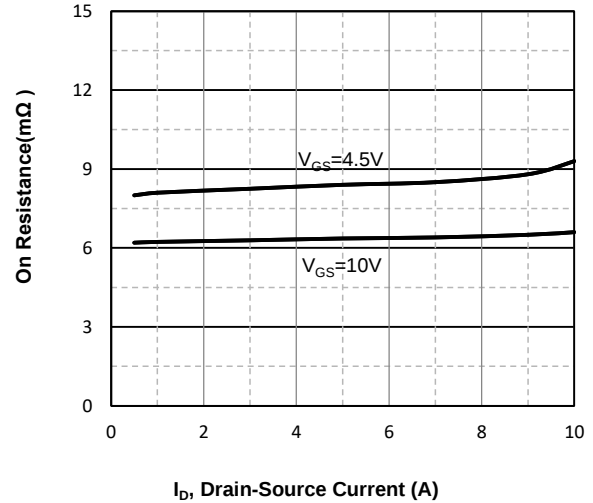


Fig4. On-Resistance Vs. Drain-Source Current

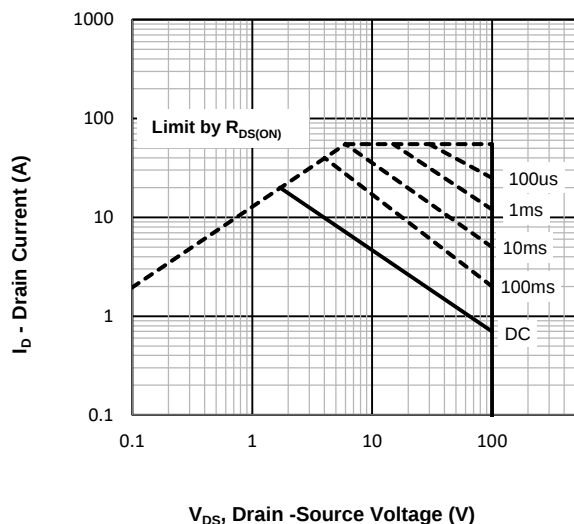


Fig5. Maximum Safe Operating Area

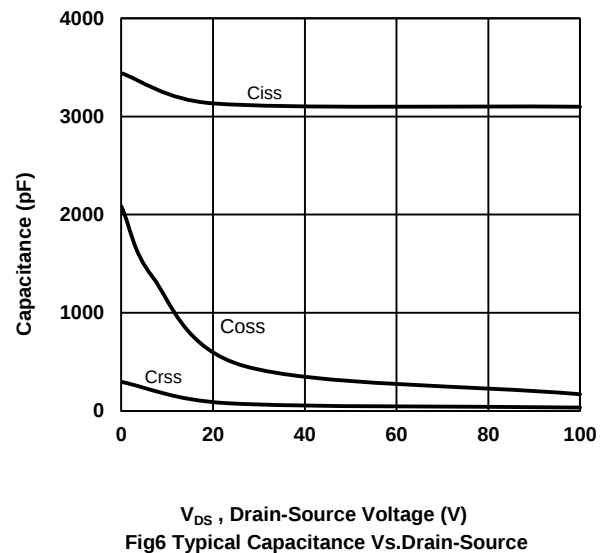


Fig6. Typical Capacitance Vs. Drain-Source

SOP-8 Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	1.450	1.750	0.057	0.068
A1	0.100	0.250	0.003	0.009
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.012	0.020
c	0.170	0.250	0.006	0.009
D	4.700	5.100	0.185	0.200
e	1.270(BSC)		0.050(BSC)	
E	3.800	4.000	0.149	0.157
E1	5.800	6.200	0.228	0.244
L	0.400	1.270	0.015	0.050
θ	0°	8°	0°	8°