

### ● General Description

The AGM606S combines advanced trench MOSFET technology with a low resistance package to provide extremely low  $R_{DS(ON)}$ .

This device is ideal for load switch and battery protection applications.

### ● Features

- Advance high cell density Trench technology
- Low  $R_{DS(ON)}$  to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance

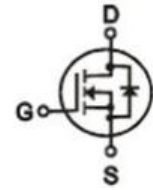
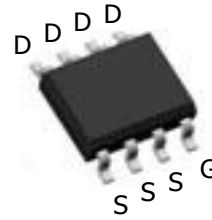
### ● Application

- MB/VGA Vcore
- SMPS 2<sup>nd</sup> Synchronous Rectifier
- POL application
- BLDC Motor driver

### Product Summary

BVDSS	RDSON	ID
60V	7.2mΩ	14A

### SOP8 Pin Configuration



### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM606S	AGM606S	SOP8	----	----	3000

**Table 1. Absolute Maximum Ratings (TA=25°C)**

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	60	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(TA=25°C) <b>(Note 1)</b>	14	A
	Drain Current-Continuous(TA=100°C)	12	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed <b>(Note 2)</b>	45	A
PD	Maximum Power Dissipation(TA=25°C)	2.5	w
	Maximum Power Dissipation(TA=100°C)	1.0	w
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	°C

**Table 2. Thermal Characteristic**

Symbol	Parameter	Typ	Max	Unit
RθJA	Thermal Resistance Junction-ambient (Steady State) <sup>1</sup>	--	50	°C/W

**Table 3. Electrical Characteristics (TA=25°C unless otherwise noted)**

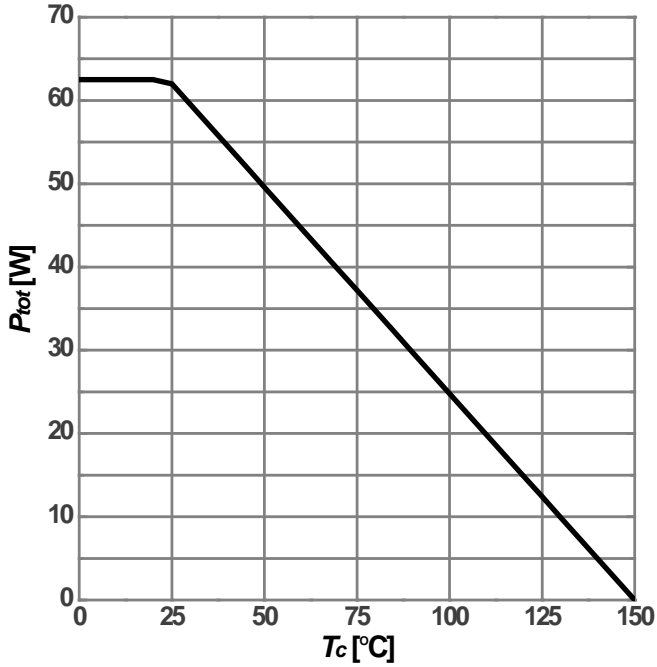
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>On/Off States</b>						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	60	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=60V,VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=250μA	1.2	1.6	2.5	V
gFS	Forward Transconductance	VDS=25V,ID=8A	--	14	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=12A	--	7.2	10	mΩ
		VGS=4.5V, ID=10A	--	9.5	15	mΩ
<b>Dynamic Characteristics</b>						
Ciss	Input Capacitance	VDS=20V,VGS=0V, F=1MHZ	--	1450	--	pF
Coss	Output Capacitance		--	280	--	pF
Crss	Reverse Transfer Capacitance		--	4.1	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	1.7	--	Ω
<b>Switching Times</b>						
td(on)	Turn-on Delay Time	VGS=15V,VDS=30V, RL=0.75Ω,RGEN=3.3Ω	--	11	--	nS
tr	Turn-on Rise Time		--	50	--	nS
td(off)	Turn-Off Delay Time		--	56	--	nS
tf	Turn-Off Fall Time		--	12	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=30V, ID=12A	--	23	--	nC
Qgs	Gate-Source Charge		--	48	--	nC
Qgd	Gate-Drain Charge		--	2.1	--	nC
<b>Source-Drain Diode Characteristics</b>						
ISD	Source-Drain Current(Body Diode)		--	--	14	A
VSD	Forward on Voltage	VGS=0V,IS=15A	--	--	1.2	V
trr	Reverse Recovery Time	IF=15A , dI/dt=100A/μs , TJ=25°C	--	--	32	ns
Qrr	Reverse Recovery Charge		--	--	46	nc

Notes 1.The maximum current rating is package limited.

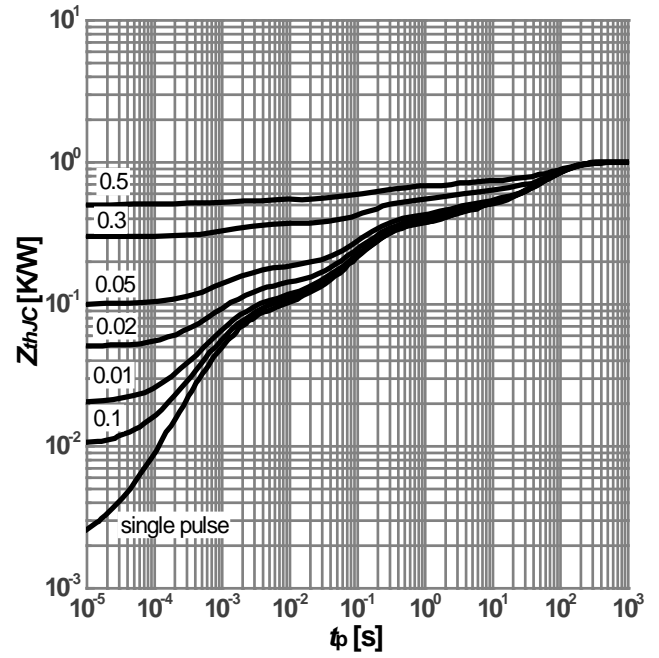
Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3.EAS condition: TJ=25°C

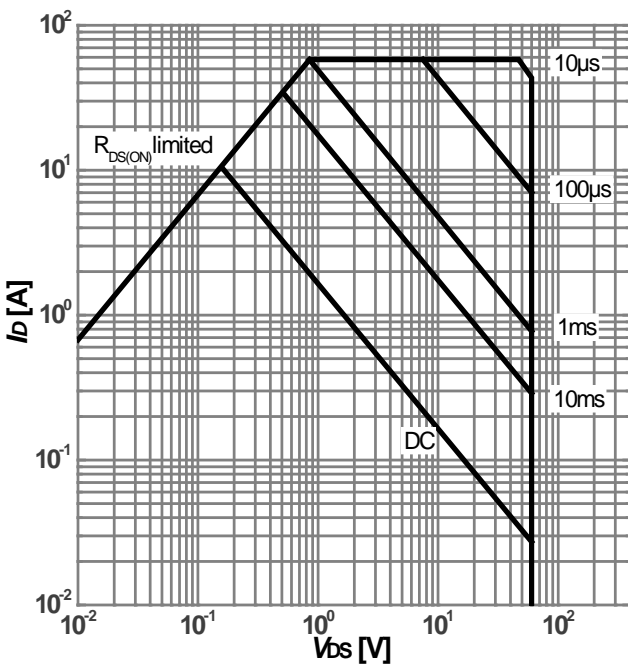
## Electrical characteristics diagrams

**Diagram 1: Power dissipation (SOP-8)**


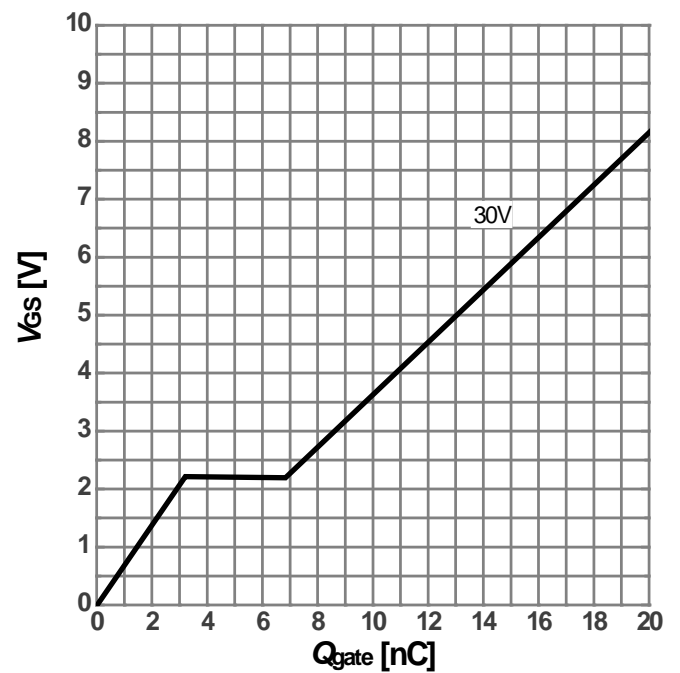
$$P_{tot}=f(T_C)$$

**Diagram 2: Max. transient thermal impedance (SOP-8)**


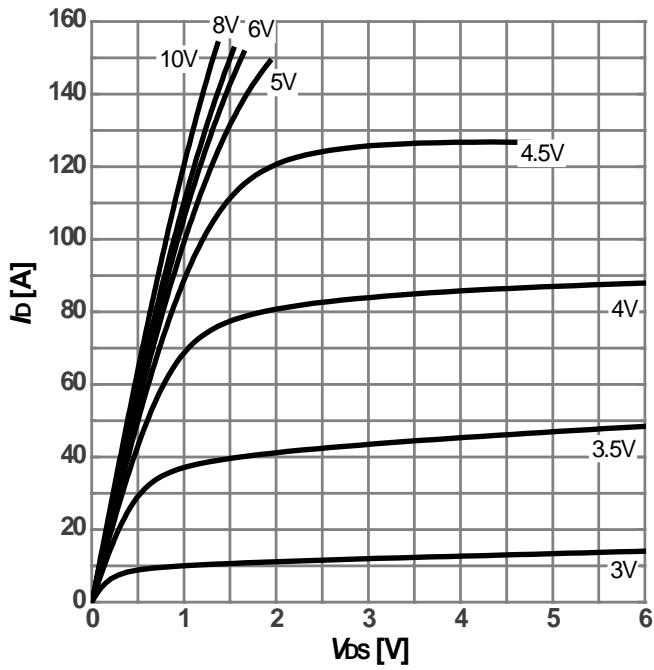
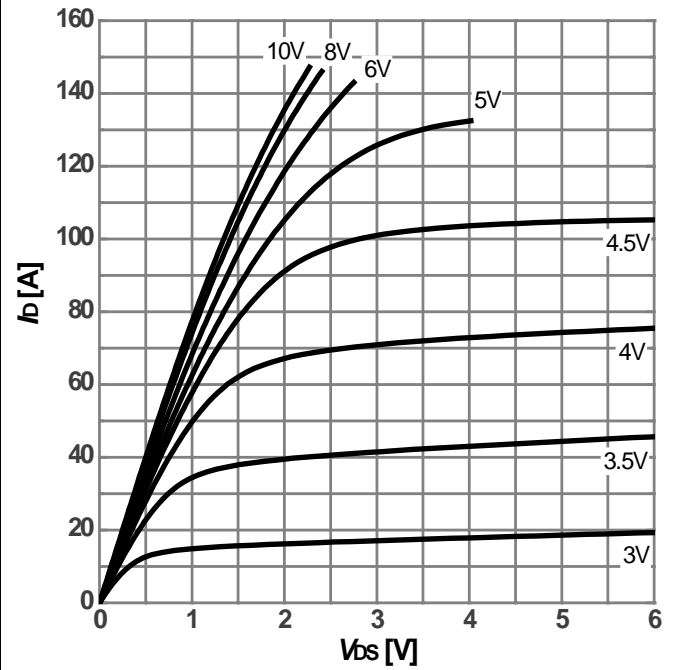
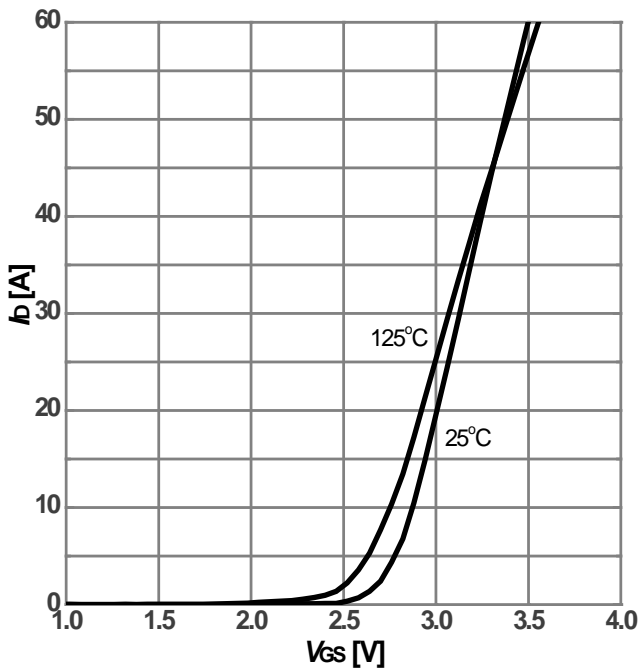
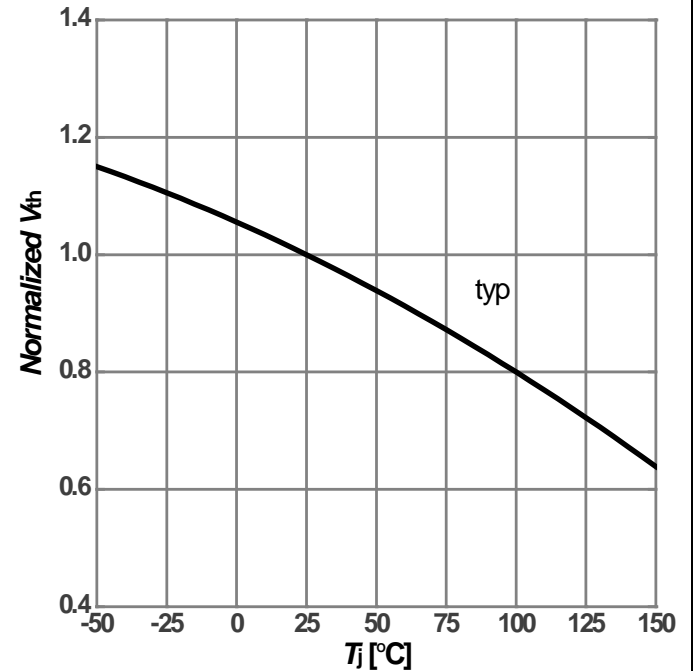
$$Z_{thJC}=f(t_p); \text{ parameter: } D= t_p/T$$

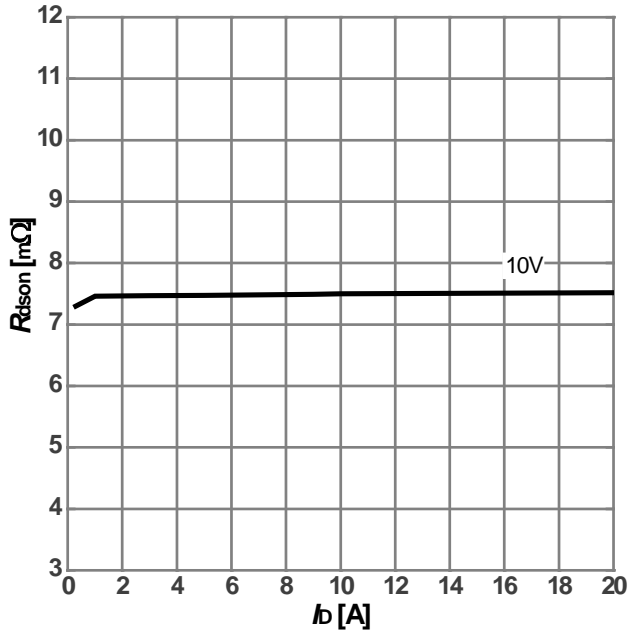
**Diagram 3: Safe operating area (SOP-8)**


$$I_D=f(V_{DS}); T_J=25^\circ\text{C}; D=0; \text{ parameter: } t_p$$

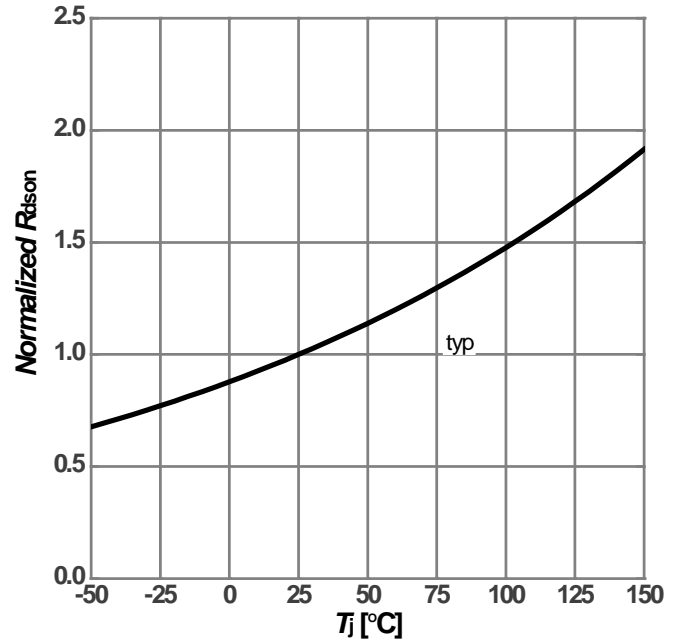
**Diagram 4: Typ. gate charge**


$$V_{GS}=f(Q_{gate}); I_D=14.5\text{A pulsed}; V_{DS}=30\text{V}$$

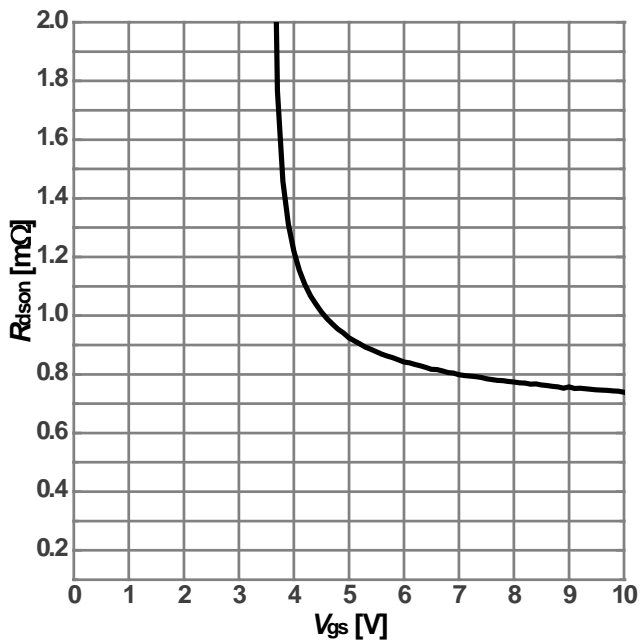
**Diagram 5: Typ. output characteristics**

 $I_D = f(V_{DS}); T_J = 25^\circ\text{C}; \text{parameter: } V_{GS}$ 
**Diagram 6: Typ. output characteristics**

 $I_D = f(V_{DS}); T_J = 125^\circ\text{C}; \text{parameter: } V_{GS}$ 
**Diagram 7: Typ. transfer characteristics**

 $I_D = f(V_{GS}); V_{DS} = 15\text{V}; \text{parameter: } T_J$ 
**Diagram 8: Gate threshold voltage vs. Junction temperature**

 $V_{th} = f(T_J); I_D = 250\mu\text{A}$

**Diagram 9: On-state resistance vs. Drain current**


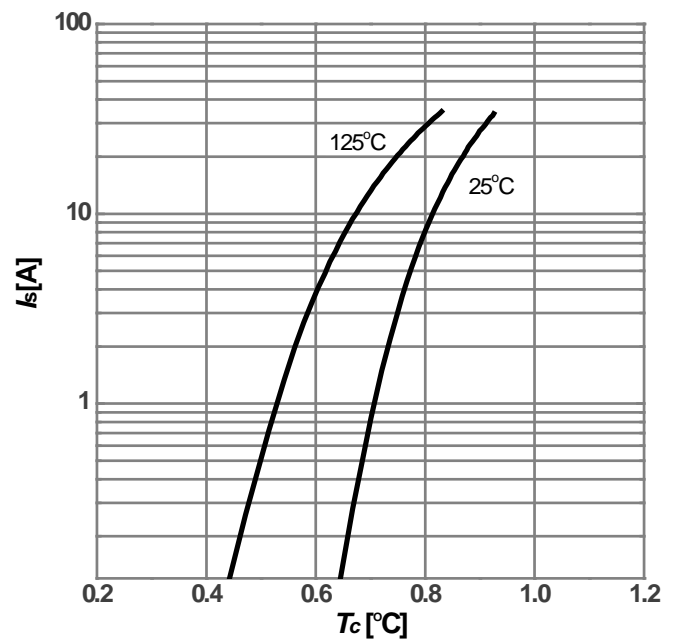
$$R_{DS(on)}=f(I_D); T_J=25^{\circ}\text{C}; \text{parameter: } V_{GS}$$

**Diagram 10: On-state resistance vs. Junction temperature**


$$R_{DS(on)}=f(T_J); I_D=14\text{A}; V_{GS}=10\text{V}$$

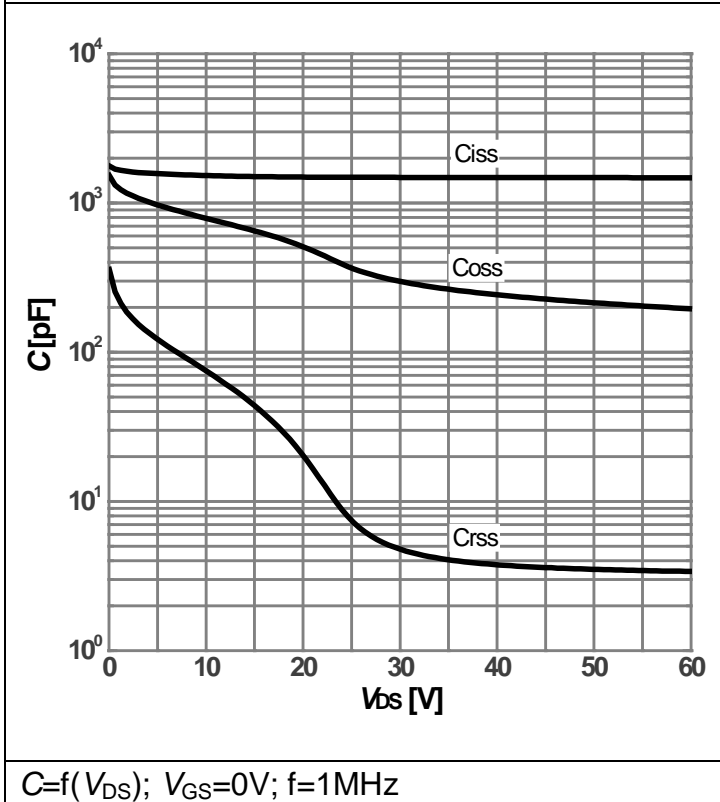
**Diagram 11: On-state resistance vs.  $V_{GS}$  characteristics**


$$R_{DS(on)}=f(V_{GS}); T_J=25^{\circ}\text{C}; I_D=14\text{A}$$

**Diagram 12: Forward characteristics of reverse diode**


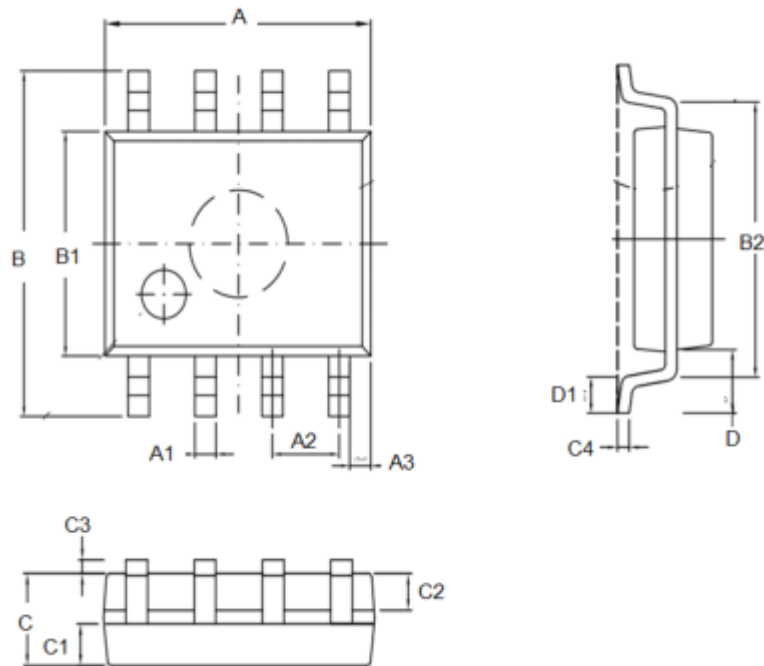
$$I_F=f(V_{SD}); \text{parameter: } T_J$$

Diagram 13: Typ. capacitances



**●Dimensions(SOP8)**

SYMBOL	min	TYP	max	SYMBOL	min		max
A	4.80		5.00	C	1.30		1.50
A1	0.37		0.47	C1	0.55		0.75
A2		1.27		C2	0.55		0.65
A3		0.41		C3	0.05		0.20
B	5.80		6.20	C4	0.19	0.20	0.23
B1	3.80		4.00	D		1.05	
B2		5.00		D1	0.40		0.62




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