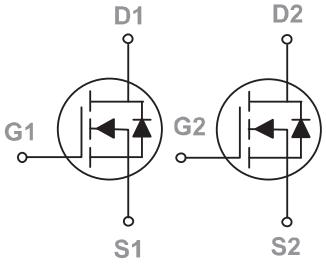
DACO SEMICONDUCTOR CO.,LTD.

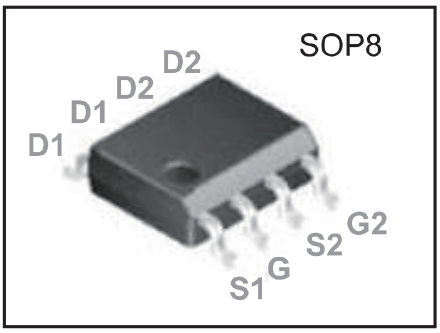
DAM10W30S

N+N-Channel Enhancement Mode MOSFET

Features

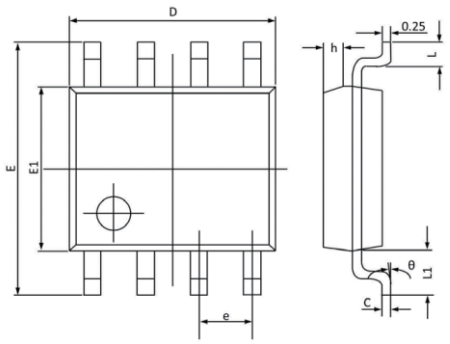
- V_{DSS} = 30V
- $R_{DS(ON)}$ Typ.10mΩ @ V_{GS} = 10V
- Improved dv/dt capability
- Fast switching
- Pb Free & RoHS Compliant
- Green Device Available

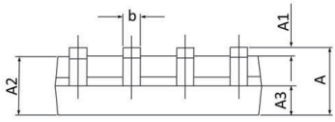




Applications

- Backlighting
- Power Converters
- Synchronous Rectifiers





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

Parameter	Symbol	Ratings	Unit
Drain Source Voltage	V_{DS}	30	V
Gate Source Voltage	V_{GS}	±20	V
Drain Current Continuous @ Tc = 25°C @ Tc = 100°C	I_D	10 6.3	A
Drain Current Pulsed@ Tc = 25°C	I_{DM}	40	A
Single Pulse Avalanche Energy	EAS	13	mJ
Single Pulse Avalanche Current	IAS	16	A
Maximum Power Dissipation	P_D	2.1	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance Junction to ambient Note3	$R_{\theta JA}$	60	°C/W

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.068
A1	0.100	0.250	0.004	0.009
A2	1.300	1.500	0.052	0.059
A3	0.600	0.700	0.024	0.027
b	0.390	0.480	0.016	0.018
c	0.210	0.260	0.009	0.010
D	4.700	5.100	0.186	0.200
E	5.800	6.200	0.229	0.244
E1	3.700	4.100	0.146	0.161
e	1.270(BSC)		0.050(BSC)	
h	0.250	0.500	0.010	0.019
L	0.500	0.800	0.019	0.031
L1	1.050(BSC)		0.041(BSC)	
θ	0°	8°	0°	8°

Electrical Characteristics @ T_J=25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OFF Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V , I_{DS}=250uA	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V , V_{DS}=30V	-	-	1	uA
Gate-Body Leakage	I_{GSS}	V_{GS}=±20V , V_{DS}=0V	-	-	±100	nA
ON Characteristics						
Gate Threshold Voltage	V_{TH}	V_{DS}=V_{GS} , I_{DS}=250uA	1.2	1.8	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V , I_{DS}=8A	-	10	13	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V V_{GS}=0V Freq.=1MHz	-	620	900	pF
Output Capacitance	C_{oss}		-	85	125	
Reverse Transfer Capacitance	C_{rss}		-	60	90	
Switching Characteristics						
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=15V V_{GS}=10V R_G =6Ω I_{DS}=1A	-	3.8	7	ns
Rise Time	T_r		-	10	19	
Turn-Off Delay Time	$T_{d(off)}$		-	22	42	
Fall Time	T_f		-	6.6	13	
Total Gate Charge	Q_g	V_{DS}=15V V_{GS}=4.5V I_{DS}=5A	-	7.4	12	nC
Gate to Source Charge	Q_{gs}		-	2.3	5	
Gate to Drain Charge	Q_{gd}		-	3	6	
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=1A	-	-	1	V

Notes:

1. Pulse Test: Pulse Width ≦ 300μs, Duty Cycle ≦ 2%.
2. V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=16A.,R_G=25Ω, Starting T_J=25°C
3. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins.

   $R_{\theta JC}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design. $R_{\theta JA}$ shown below for single device operation on FR-4 in still air.

Typical Characteristics

Fig.1 Continuous Drain Current vs. T_C

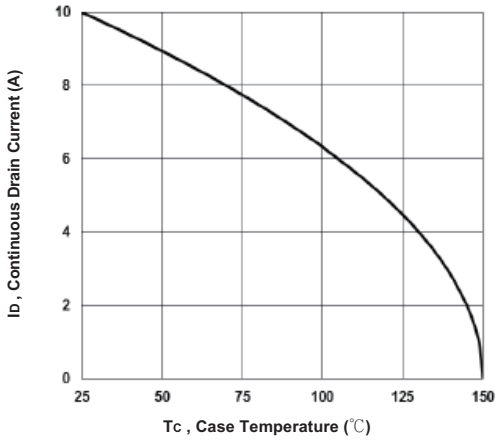


Fig.2 Normalized RDSON vs. T_J

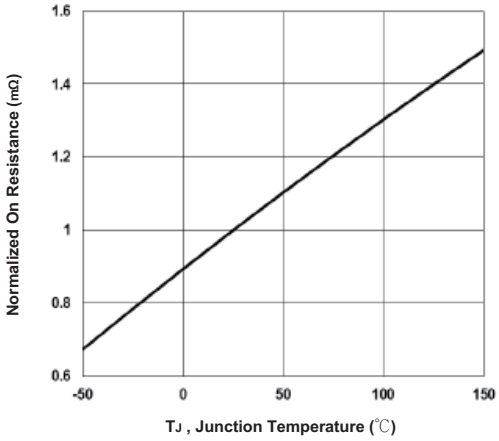


Fig.3 Normalized Vth vs. T_J

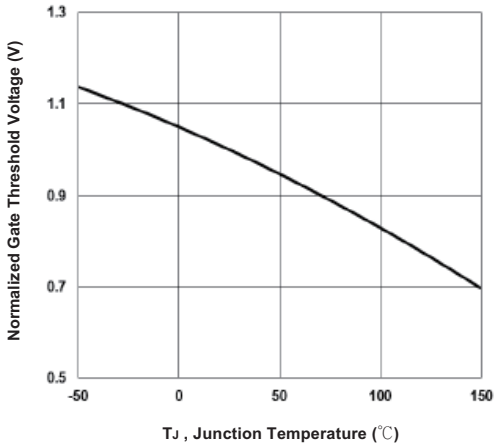


Fig.4 Gate Charge Waveform

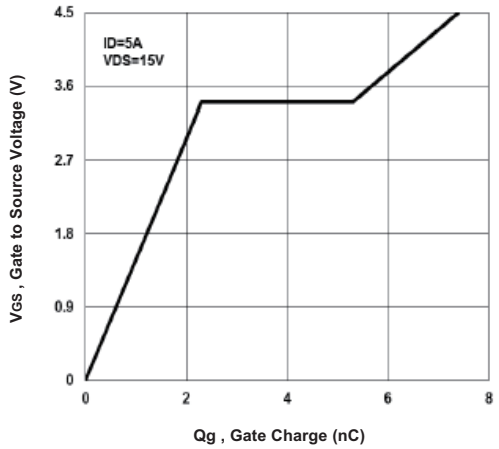


Fig.5 Typical Output Characteristics

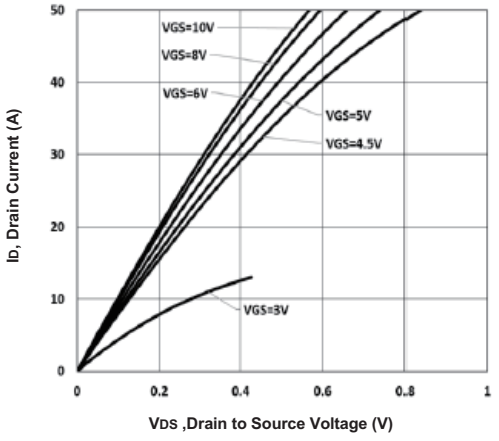
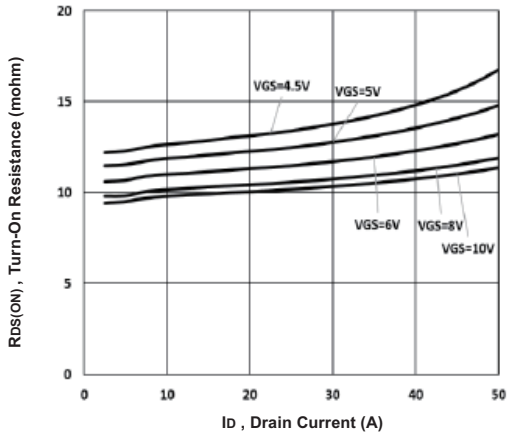


Fig.6 Turn-On Resistance vs. I_D



Typical Characteristics

Fig.7 Capacitance Characteristics

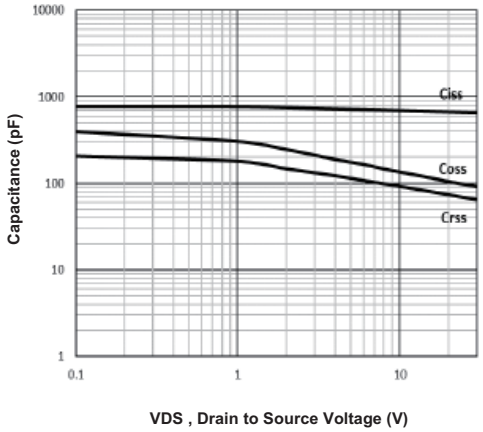


Fig.8 Normalized Transient Response

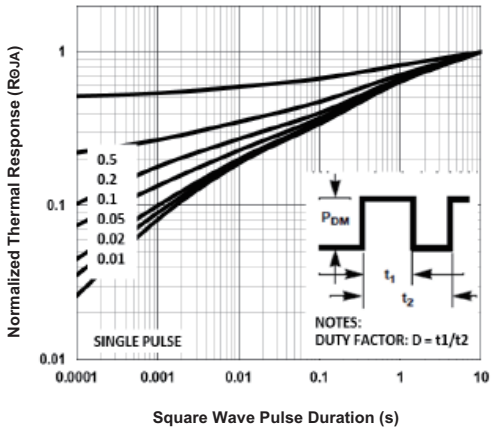


Fig.9 Maximum Safe Operation Area

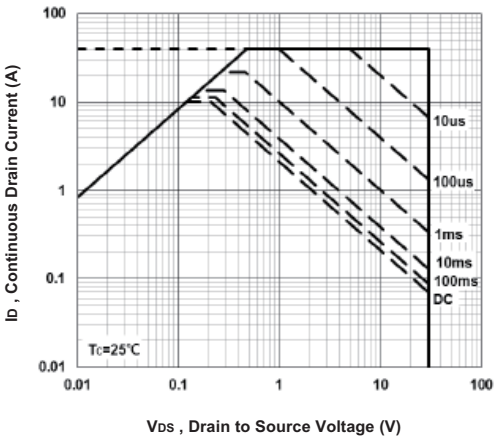


Fig.10 Switching Time Waveform

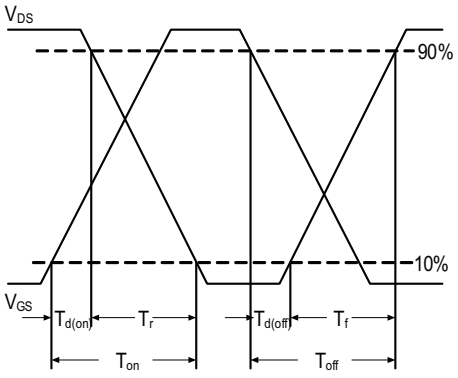
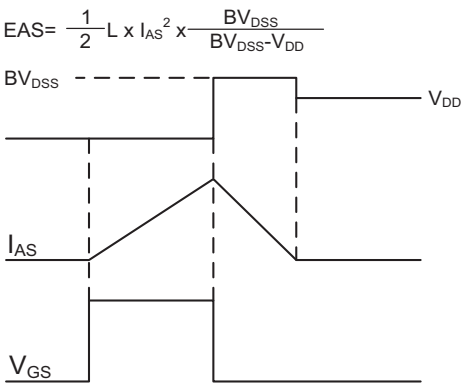



Fig.11 EAS Waveform