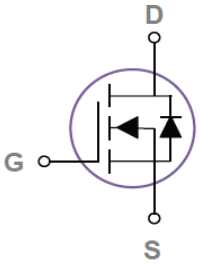
DACO SEMICONDUCTOR CO.,LTD.

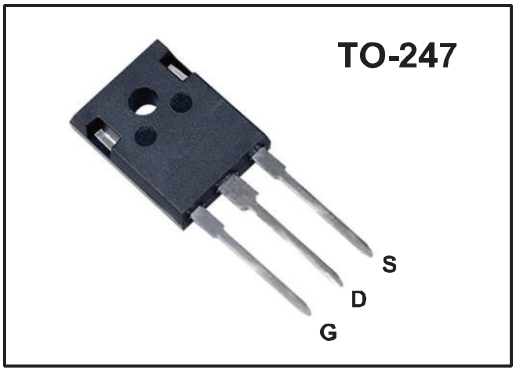
DAM320N40P

N-Channel Enhancement Mode MOSFET

Features

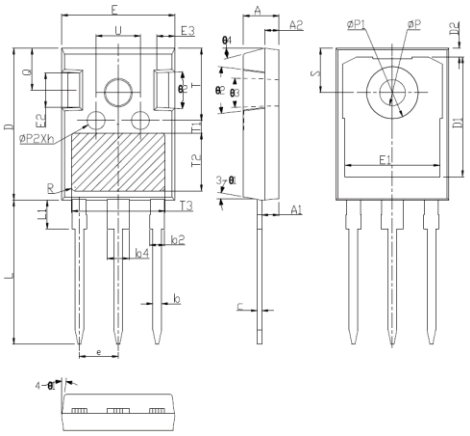
- V_{DSS} = 40V
- $R_{DS(ON)}$ Typ.1.2mΩ @ V_{GS} = 10V
- Fully Avalanche Rated
- Pb Free & RoHS Compliant





Applications

- Backlighting
- Power Converters
- Synchronous Rectifiers



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

Parameter	Symbol	Ratings	Unit
Drain Source Voltage	V_{DS}	40	V
Gate Source Voltage	V_{GS}	±20	V
Drain Current Continuous @ T_C = 25°C @ T_C = 100°C	I_D	320 200	A
Drain Current Pulsed@ T_C = 25°C	I_{DM}	1280	A
Single Pulse Avalanche Energy	EAS	1377	mJ
Single Pulse Avalanche Current	IAS	166	A
Maximum Power Dissipation	P_D	415	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance Junction to Case Note3	$R_{\theta Jc}$	0.3	°C/W

Symbol	Dimensions In Millimeters			Symbol	Dimensions In Millimeters		
	Min	Nom	Max		Min	Nom	Max
A	4.75	5.00	5.25	L	19.52	19.92	20.32
A1	2.16	2.41	2.66	L1	—	---	4.30
A2	1.85	2.00	2.15	ΦP	3.35	3.60	3.85
b	1.11	1.20	1.35	ΦP1	—	---	7.30
b2	1.90	2.01	2.25	ΦP2	2.25	2.50	2.75
b4	2.90	3.10	3.25	Q	5.50	5.80	6.10
c	0.51	0.61	0.75	S	6.15BSC		
D	20.60	21.00	21.40	R	0.50REF		
D1	16.15	16.55	16.95	T	9.70	---	10.30
D2	1.00	1.20	1.40	T1	1.65REF		
E	15.50	15.80	16.10	T2	8.00REF		
E1	13.00	13.30	13.60	T3	12.80REF		
E2	4.70	5.00	5.30	U	5.90	---	6.50
E3	2.25	2.50	2.75	θ1	3°	7°	10°
e	5.44BSC			θ2	2°	5°	8°
h	0.00	0.10	0.25	θ3	1°	---	2°
				θ4	10°	15°	20°

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	40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V , V_{DS}=40V	-	-	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	1.5	2.5	3.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V , I_{DS}=20A	-	1.2	1.5	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V V_{GS}=0V Freq.=1MHz	-	17760	26600	pF
Output Capacitance	C_{oss}		-	1990	3000	
Reverse Transfer Capacitance	C_{rss}		-	341	510	
Switching Characteristics						
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=32V V_{GS}=10V R_G =6Ω I_{DS}=1A	-	74	148	ns
Rise Time	T_r		-	190	380	
Turn-Off Delay Time	$T_{d(off)}$		-	450	900	
Fall Time	T_f		-	400	800	
Total Gate Charge	Q_g	V_{DS}=32V V_{GS}=10V I_{DS}=10A	-	295	450	nC
Gate to Source Charge	Q_{gs}		-	72.9	110	
Gate to Drain Charge	Q_{gd}		-	121	180	
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}=166A,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

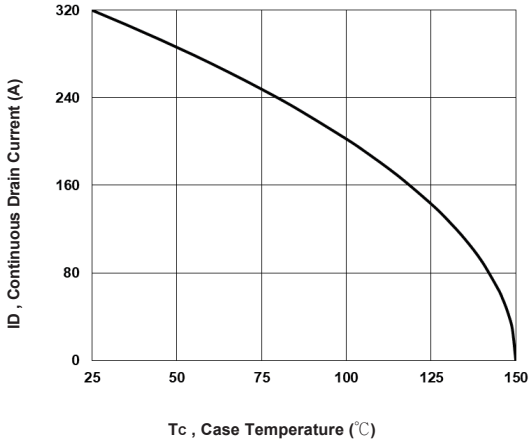


Fig.2 Normalized RDSON vs. T_J

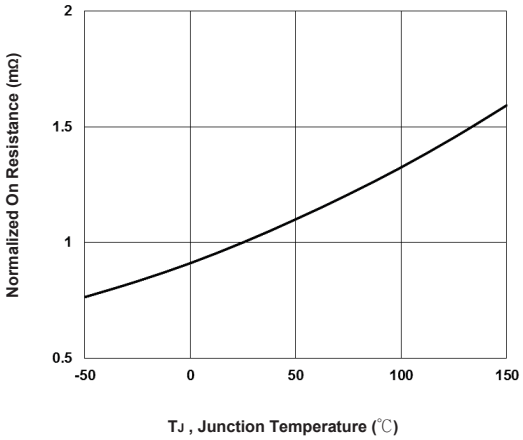


Fig.3 Normalized Vth vs. T_J

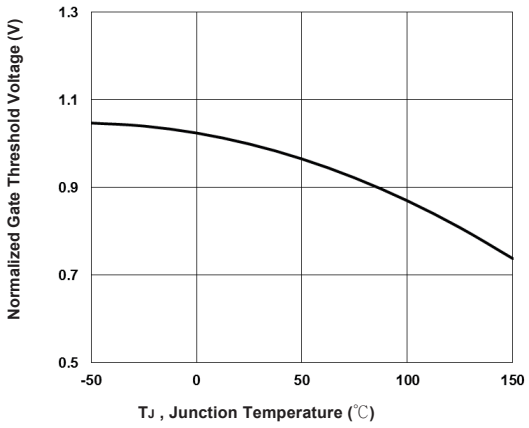


Fig.4 Gate Charge Waveform

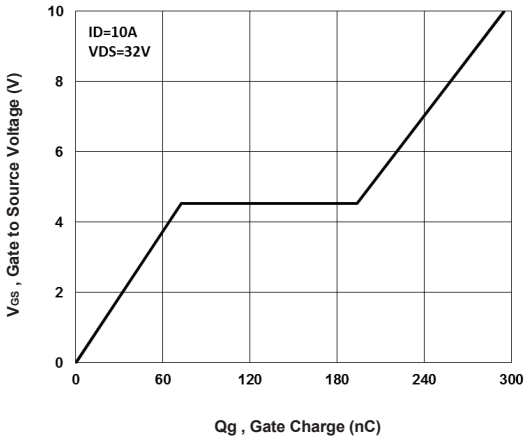


Fig.5 Normalized Transient Impedance

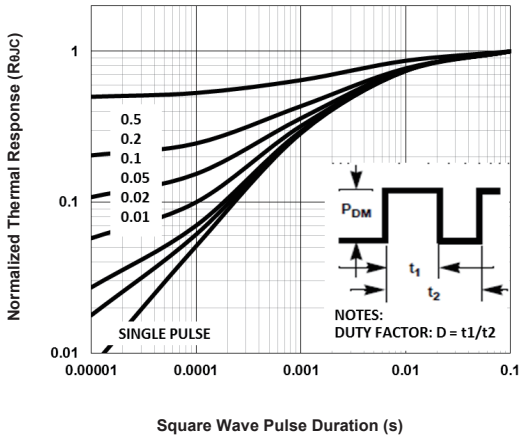
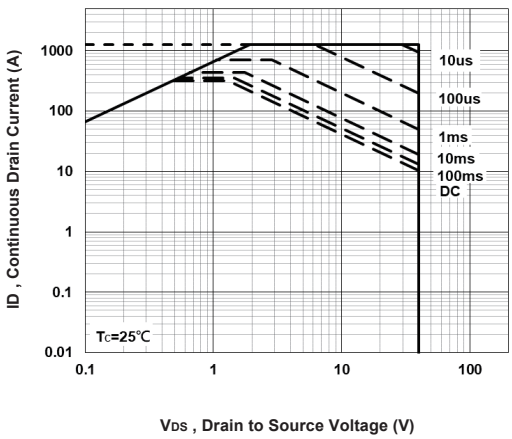


Fig.6 Maximum Safe Operation Area



Typical Characteristics

Fig.7 Switching Time Waveform

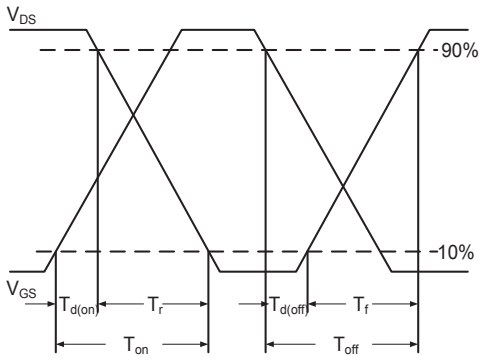


Fig.8 EAS Waveform

