DACO
SEMICONDUCTOR

DAM005N120F1
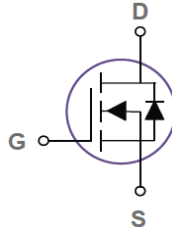
N-Channel Enhancement Mode MOSFET

Preliminary

V_{DSS}	1200V
$I_{D(@25℃)}$	5A
$R_{DS(ON)}$ max.	3.2Ω

Features

- Fast Switching
- 100% Avalanche Tested
- Improved dv/dt Capability

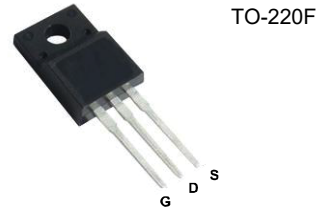### Applications

- Switch Mode Power Supply(SMPS)
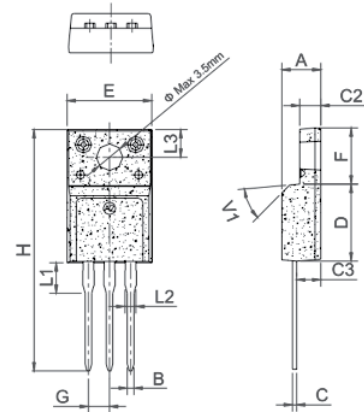- Uninterruptible Power Supply (UPS)
- Power Factor Correction(PFC)

TO-220F

Package Dimensions

Absolute Maximum Ratings

(Tc = 25℃ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain Source Voltage	V_{DS}	1200	V
Gate Source Voltage	V_{GS}	± 30	V
Drain Current Continuous @ Tc = 25°C	I_D	5	A
Drain Current Pulsed Note2	I_{DM}	20	A
Single Pulse Avalanche Energy	E_{AS}	150	mJ
Power Dissipation @ Tc= 25°C	P_D	350	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55to +150	°C
Thermal Resistance Junction to Case	$R_{\theta Jc}$	0.6	°C/W

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50		4.90	0.177		0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47		0.65	0.019		0.026
C2	2.45		2.75	0.096		0.108
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.40		6.80	0.252		0.268
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.63			0.143	
L2	1.14		1.70	0.045		0.067
L3		3.30			0.130	
V1		45°			45°	

Note : 1. Repetitive rating pulse width limited by maximum junction temperature
2. Repetitive rating : pulse width limited by junction temperature.

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OFF Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V，I_D =0.25mA	1200	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{GS}=0V，V_{DS}=1200V	-	-	5	μA
Gate To Source Leakage Current	I_{GSS}	V_{GS}=±30V，V_{DS}=0V	-	-	±100	nA
ON Characteristics (Pulse Width < 380μs, Duty Cycle < 2%.)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}，I_D =0.25mA	3.0	4.0	5.0	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V，I_D =1.5A	-	2.6	3.2	Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V	-	1206	-	pF
Output Capacitance	C_{oss}	V_{GS}=0V	-	103	-	
Reverse Transfer Capacitance	C_{rss}	Freq.=1MHz	-	22.3	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=600V	-	23.6	-	ns
Rise Time	t_r		-	8.6	-	
Turn-Off Delay Time	$t_{d(off)}$	I_D =3A	-	50.8	-	
Fall Time	t_f	R_G =10Ω	-	18	-	
Total Gate Charge	Q_g	V_{DS}=960V	-	39	-	nC
Gate to Source Charge	Q_{gs}	V_{GS}=10V	-	7.5	-	
Gate to Drain Charge	Q_{gd}	I_{DS}=3A	-	23.4	-	
Source-Drain Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V，I_S=3A	-	-	1.6	V
Continuous Source Current (Body Diode)	I_{SD}		-	-	5	A
Max. Pulsed Current (Body Diode)	I_{SM}		-	-	20	A
Reverse Recovery Time	T_{rr}	I_S=3A	-	526	-	ns
Reverse Recovery Charge	Q_{rr}	di_F/dt=100A/μs	-	2	-	μC

Note : 3. I_{SD} = 6A, di/dt ≤ 200A/us, V_{DD} ≤ BV_{DS}, Start T_J =25℃

Typical Performance Characteristics

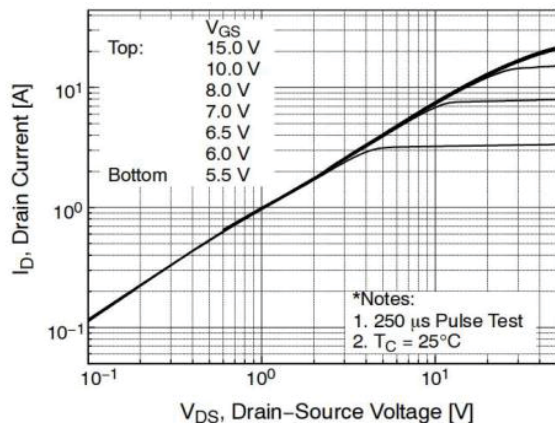Figure 1. Output Characteristics

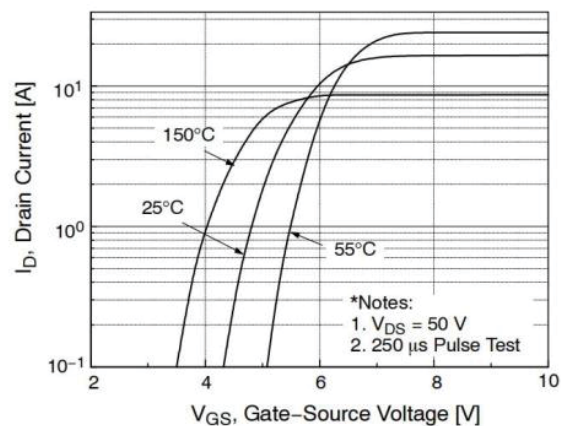Figure 2. Transfer Characteristics

Figure 3. Drain-to-Source On Resistance
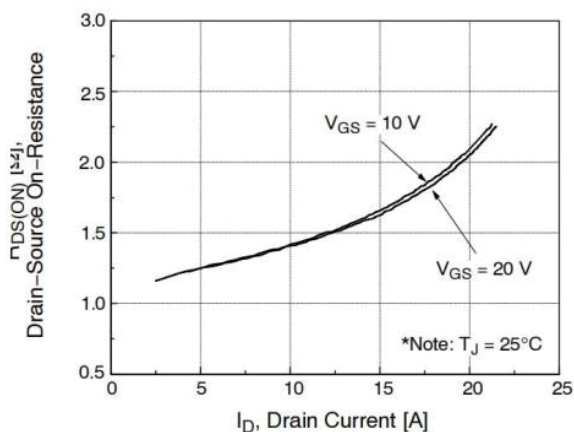vs Drain Current

Figure 4. Body Diode Forward Voltage vs
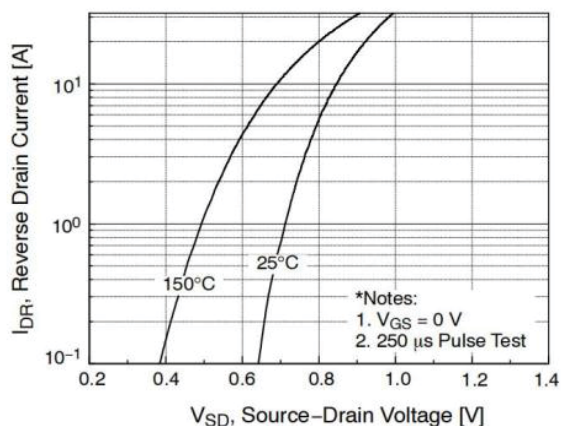Source Current and Temperature
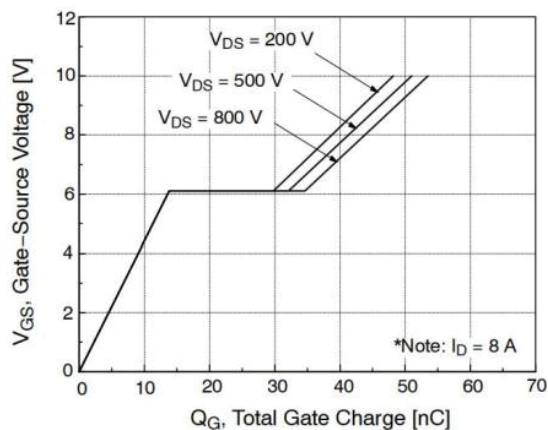

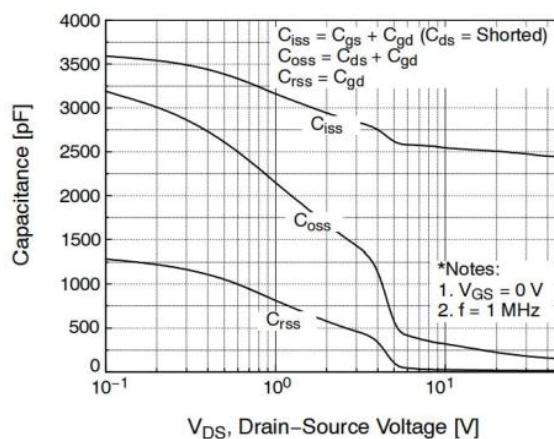Figure 5. Gate Charge Characteristics

Figure 6. Capacitance Characteristic

Typical Performance Characteristics

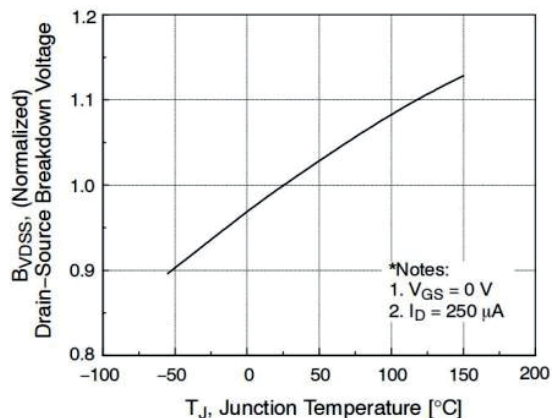Figure 7. Normalized Breakdown Voltage vs Junction Temperature

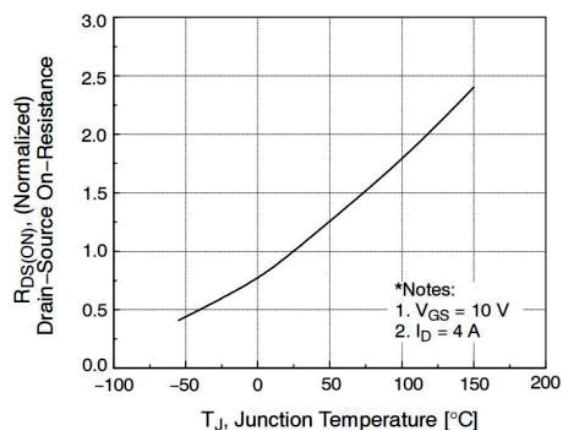Figure 8. Normalized On Resistance vs Junction Temperature

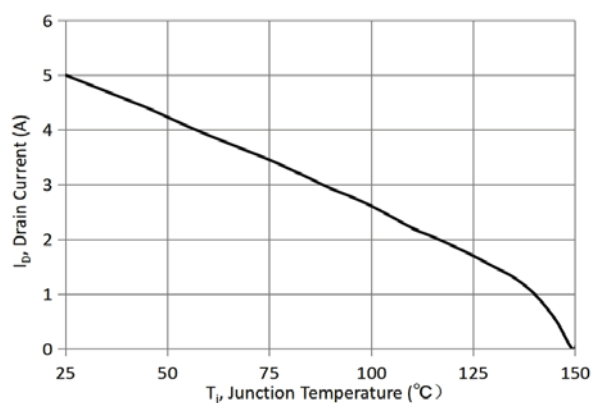Figure 9. Maximum Continuous Drain Current vs Case Temperature Temperature
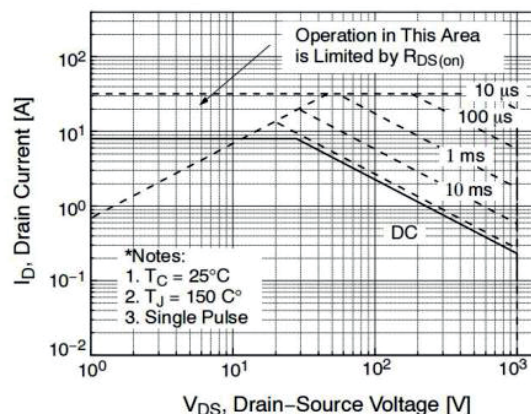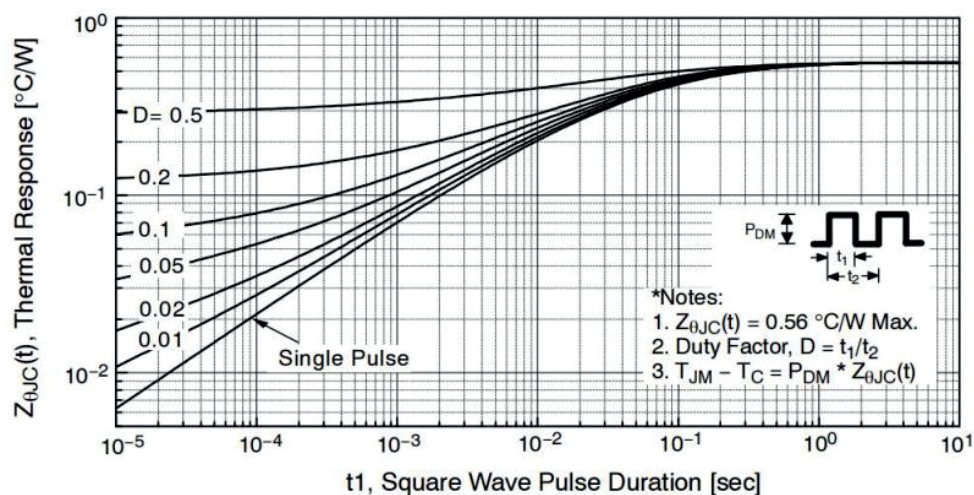

Figure 10. Maximum Safe Operating Area

Figure 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

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