DACO®

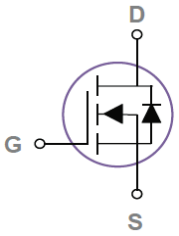
DAM050N020U1

N-Channel Enhancement Mode MOSFET

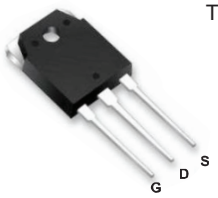
V_{DSS}	200V
$I_{D(@25℃)}$	50A
$R_{DS(ON)}$ typ.	30mΩ

Features

- Fast switching
- 100% avalanche tested
- Improved dv/dt capability



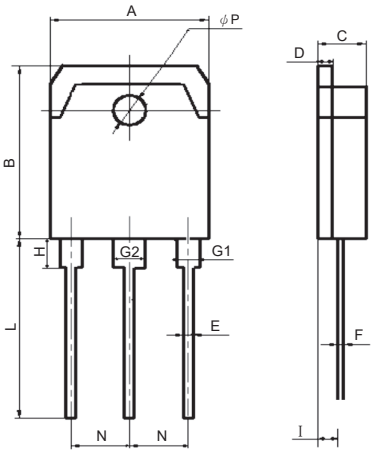
TO-3P



Applications

- DC-DC Converters
- DC-AC Inverters for UPS
- SMPS and Motor Controls

Package Dimensions



Absolute Maximum Ratings

(Tc = 25℃ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage (Note1)	V_{DSS}	200	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current Continuous	I_D	50	A
Pulsed Drain Current (Note2)	I_{DM}	200	A
Single Pulse Avalanche Energy (Note2)	E_{AS}	1514	mJ
Avalanche Energy ,Repetitive (Note1)	E_{AR}	6.05	mJ
Avalanche Current (Note1)	I_{AS}	17.4	A
Power Dissipation @ T_C= 25°C	P_D	250	W
Storage Temperature Range	T_{STG}	-55 to +150	℃
Operating Junction Temperature Range	T_J	-55 to +150	℃
Thermal Resistance Junction to Case	$R_{\theta JC}$	0.5	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	°C/W

SYMBOLS	MILLIMETERS	
	MIN	MAX
A	15.10	15.90
B	19.50	20.50
C	4.70	4.90
D	1.40	1.60
E	0.90	1.10
F	0.50	0.70
G1	2.00	2.20
G2	3.00	3.20
H	3.00	3.60
I	1.20	1.60
L	19.50	20.90
N	5.25	5.65
ΦP	3.10	3.30

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_{DS}=0.25mA	200	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V，V_{DS}=200V	-	-	1	μA
Gate To Source Forward Leakage	I_{GSS}	V_{GS}=±20V，V_{DS}=0V	-	-	±100	nA
ON Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}，I_D=0.25mA	2.0	-	4.0	V
Drain-Source On-State Resistance (Note4)	$R_{DS(on)}$	V_{GS}=10V，I_D=25A	-	30	38	mΩ
Dynamic Characteristics Note2						
Input Capacitance	C_{iss}	V_{DS}=25V V_{GS}=0V Freq.=1.0MHz	-	3538	-	pF
Output Capacitance	C_{oss}		-	657	-	
Reverse Transfer Capacitance	C_{rss}		-	280	-	
Switching Characteristics Note2						
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=100V V_{GS}=10V I_D=50A R_G=25Ω	-	58	-	ns
Rise Time	t_r		-	195	-	
Turn-Off Delay Time	$t_{d(off)}$		-	841	-	
Fall Time	t_f		-	326	-	
Total Gate Charge	Q_g	V_{DS}=160V V_{GS}=0 to 10V I_D=50A	-	200	-	nC
Gate to Source Charge	Q_{gs}		-	16	-	
Gate to Drain Charge	Q_{gd}		-	65	-	
Source-Drain Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V，I_S=25A	-	-	1.5	V
Continuous Source Current	I_{SD}	Integral PN-diode in MOSFET	-	-	50	A
Pulsed Source Current	I_{SM}		-	-	200	
Reverse Recovery Time	T_{rr}	I_S= 50A，V_{GS}=0V di/dt=100A/μs	-	236	-	ns
Reverse Recovery Charge	Q_{rr}		-	3.37	-	μC

Notes:
1.Repetitive raating : Pulse width limited by maximum junction temperature
2.L=10mH, V_{DD} =50V, R_G =25Ω, Starting T_J =25℃
3.Pulse test : Pulse width ≦ 300μs , duty cycle ≦ 1%

Typical Performance Characteristics ， T_J = 25°C unless otherwise noted

Figure 1. Output Characteristics (T_J = 25℃)

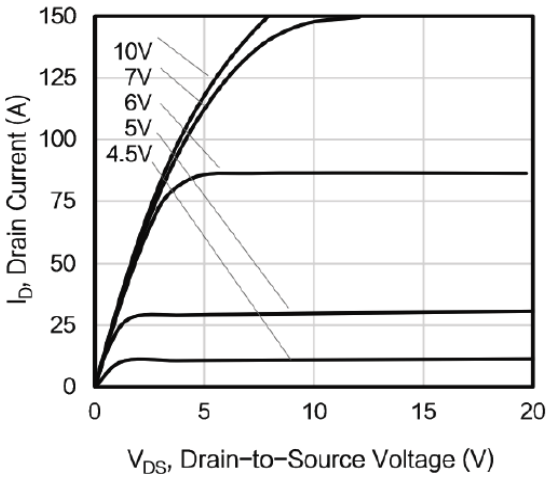


Figure 2. Body Diode Forward Voltage

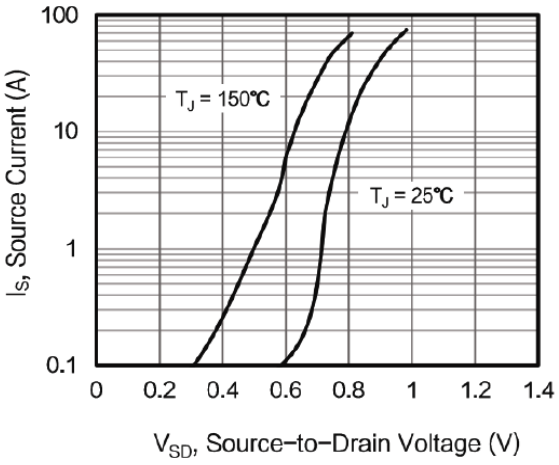


Figure 3. Drain Current vs. Temperature

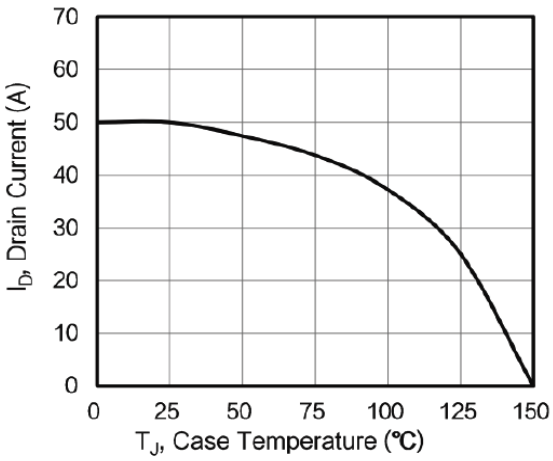


Figure 4. BV_{DSS} Variation vs. Temperature

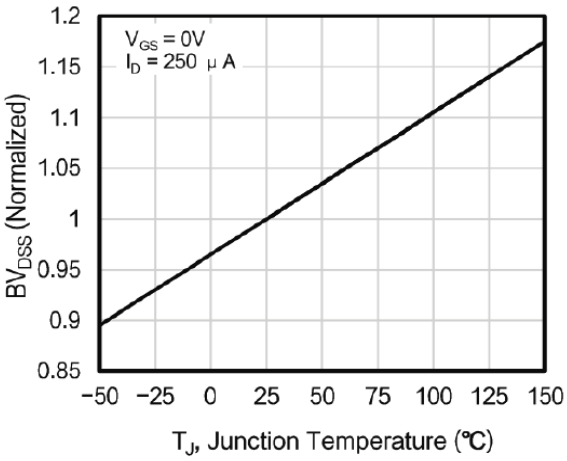


Figure 5. Transfer Characteristics

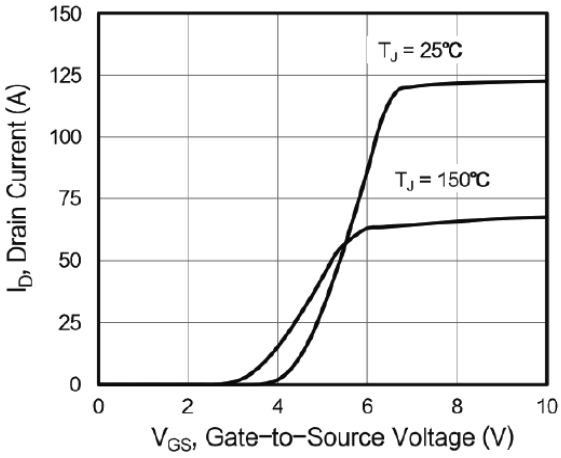
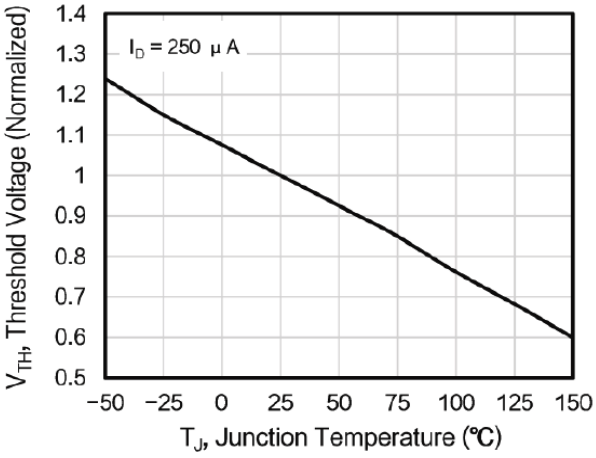


Figure 6. Threshold Voltage vs. Temperature



Typical Performance Characteristics ， T_J = 25°C unless otherwise noted

Figure 7. Capacitance

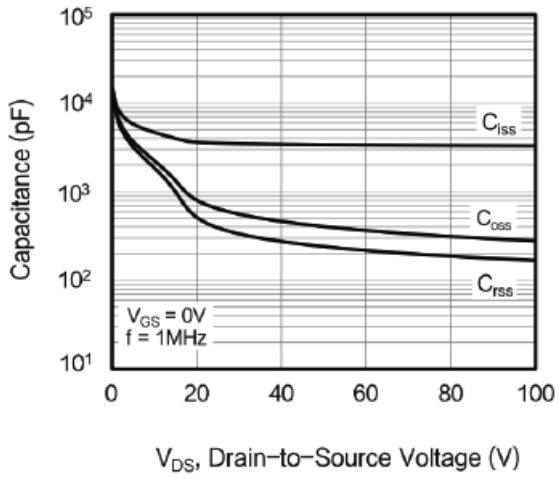


Figure 8. Gate Charge

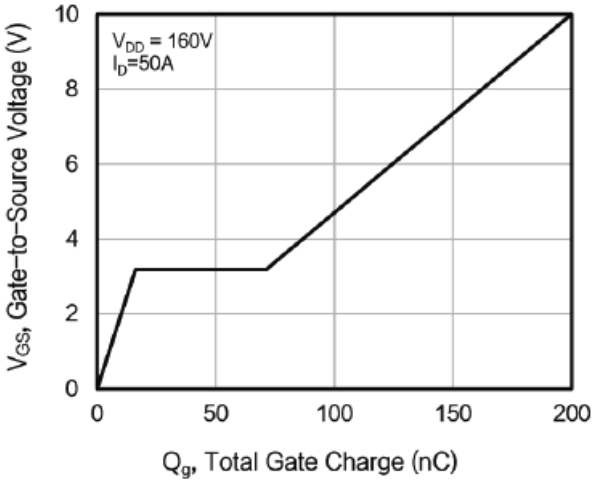


Figure 9. Transient Thermal Impedance

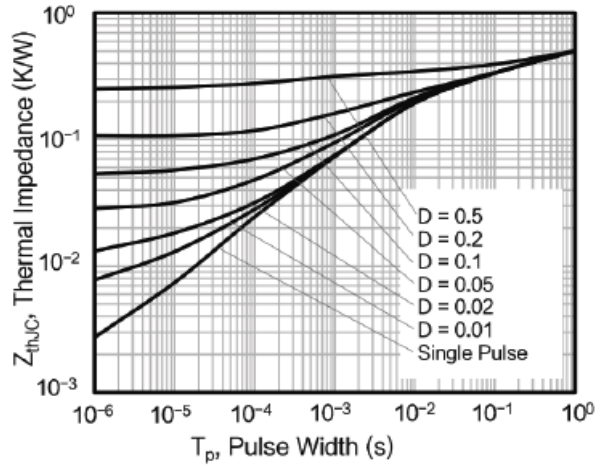


Figure 10. Safe Operating Area

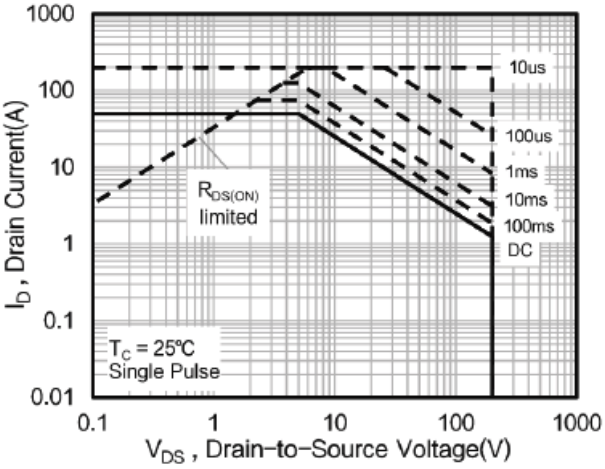


Figure A: Gate Charge Test Circuit and Waveform

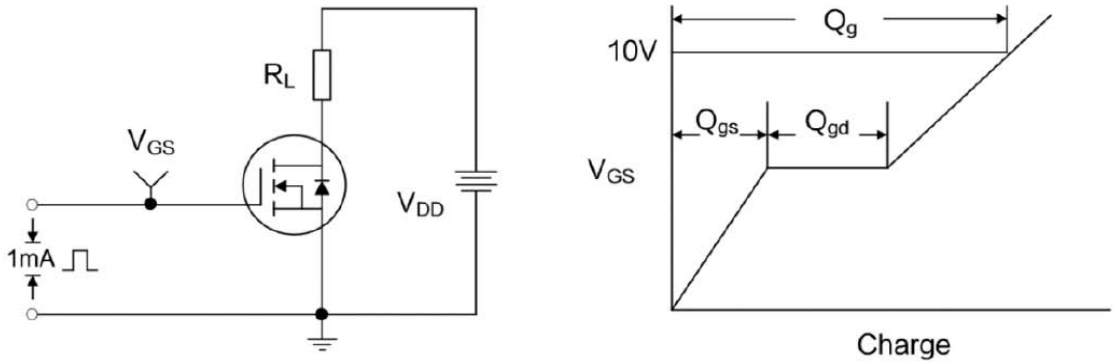


Figure B: Resistive Switching Test Circuit and Waveform

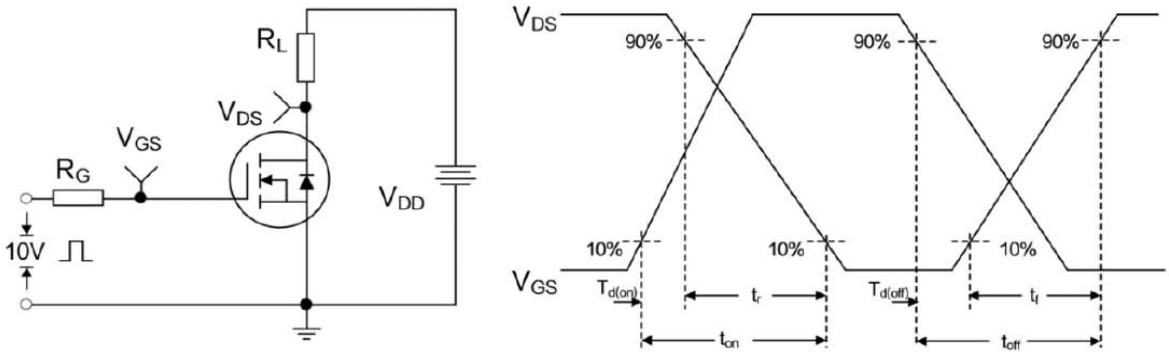
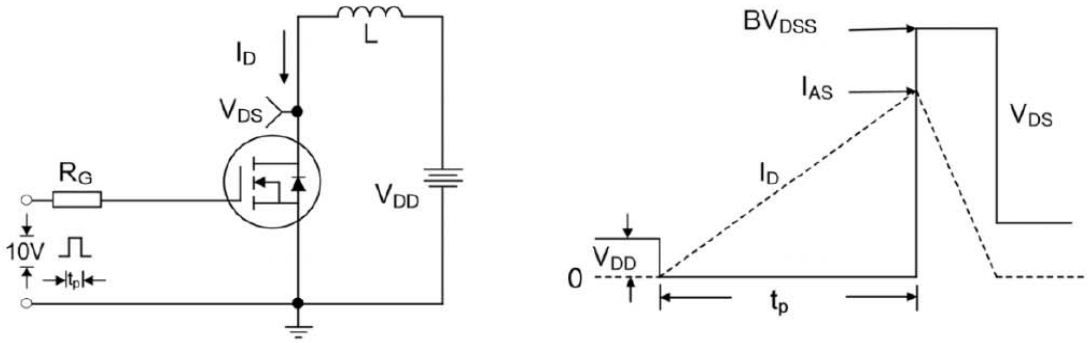


Figure C: Unclamped Inductive Switching Test Circuit and Waveform



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