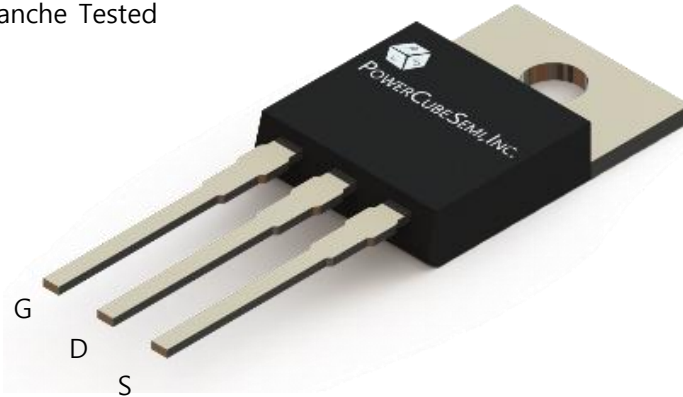# PM003N085AG

85V 200A 3mΩ Si Single N-ch Enhancement Mode MOSFET with Normal Diode

Features

Si N-Ch Enhancement Mode Power MOSFET
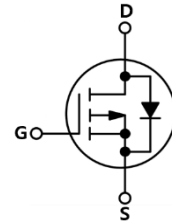
- Rated to 85V at 200Amps @T_J = 25℃

- Max $R_{DS(on)}$ = 3.0 mΩ

- Typ $R_{DS(on)}$ = 2.4 mΩ

- Gate Charge(Typ. Q_g=112 nC)

- 100% Avalanche Tested

Application

- Power switch

- DC/DC converters

PKG type : TO-220

Description

The PM003N085AG uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

Absolute Maximum Ratings

Symbol	Parameter	Test Condition	Value	Unit
BV_{DSS}	Drain-source breakdown Voltage	V_{GS}=0V, I_D=250μA	85	V
I_D	Drain current	T_C=25℃	200	A
I_{DM}	Drain current	Pulse width limited by junction temperature	800	A
V_{GS}	Gate-source voltage		±20	V
E_{AS}	Single pulsed avalanche energy	V_{GS}=10V, R_G=25Ω V_{DD}=50V, L=0.5mH	420	mJ
P_d	Power dissipation	T_C=25℃	260	W
T_j	Operating junction		150	℃
T_{stg}	Storage temperature		-55 to 150	℃

Package Marking and Ordering Information

Device Marking	Device	Package	Packing Method	Tape width	Quantity
PM003N085AG	PM003N085	TO-220	TUBE	-	50

Electrical Characteristics of Si MOSFET

| Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
BV_{DSS}	Drain-source breakdown voltage	$V_{GS} = 0V$, $I_D = 250\mu A$, $T_J = 25°C$	85	-	-	V
I_{DSS}	Zero gate voltage drain current	$V_{DS} = 68V$, $V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Gate-source leakage current	$V_{GS} = \pm20V$	-	-	±100	nA
$V_{GS(th)}$	Gate threshold voltage	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	2.0	2.8	4.0	V
$R_{DS(ON)}$	Static drain-source on state resistance	$V_{GS} = 10V$, $I_D = 20A$	-	2.4	3.0	$m\Omega$
g_{FS}	Forward transconductance	$V_{DS} = 5V$, $I_D = 20A$	-	41	-	S
$t_{d(on)}$	Turn-on Delay time	$V_{DD} = 50V$, $I_D = 50A$, $R_G = 3\Omega$	-	31	-	ns
t_r	Turn-on Rise time		-	28	-	
$t_{d(off)}$	Turn-off Delay time		-	86	-	
t_f	Turn-off Fall time		-	27	-	

Electrical Characteristics of Si MOSFET

| Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JC}$	Thermal resistance, Junction to case		0.5	-	℃/W
C_{iss}	Input capacitance	V_{DS} = 50V, V_{GS} = 0V, f = 1.0MHz	5822	-	pF
C_{oss}	Output capacitance		3380	-	
C_{rss}	Reverse transfer capacitance		269	-	
$Q_{g(tot)}$	Total gate charge at 10V	V_{DD} = 50V, I_D = 50A V_{GS} = 10V	112	-	nC
Q_{gs}	Gate to source gate charge		22	-	
Q_{gd}	Gate to drain "Miller" charge		35	-	

Electrical Characteristics of Si Diode

| Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_S	Maximum continuous drain to source diode forward current	T_c=25℃	-	200	A
V_{SD}	Drain to source diode forward voltage	I_{SD} = 20A, V_{GS} = 0V	-	1.2	V
T_{rr}	Reverse recovery time	I_F = 20A, V_{GS} = 0V, dI_F/dt=100A/μs	75	-	ns
Q_{rr}	Reverse recovery charge		133	-	nC

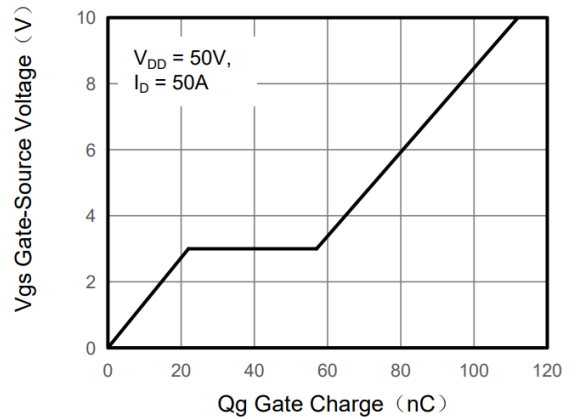# Typical Characteristics
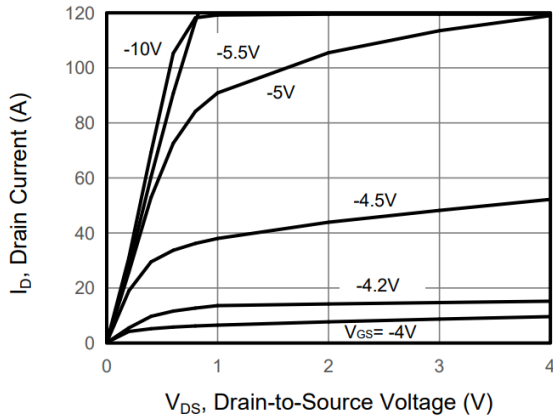
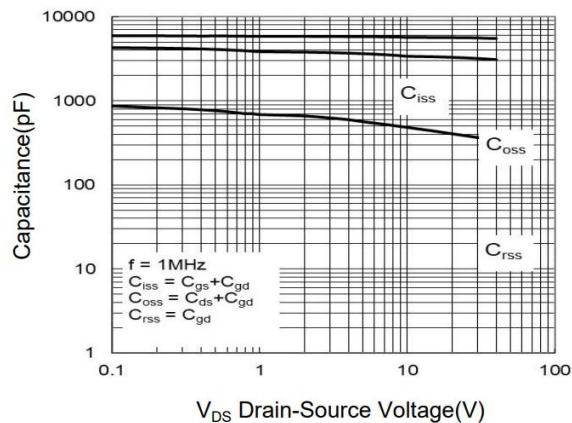**Figure 1. Output Characteristics**
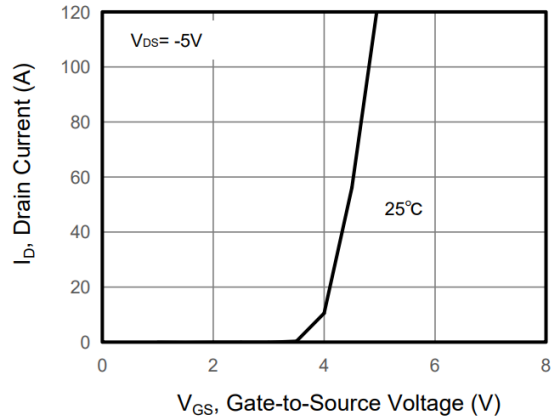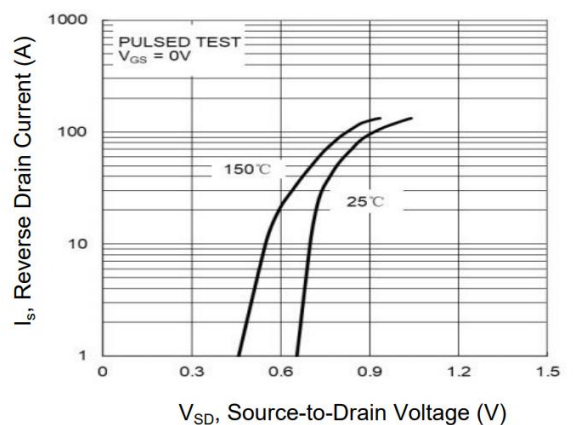

Figure 2. Transfer Characteristics
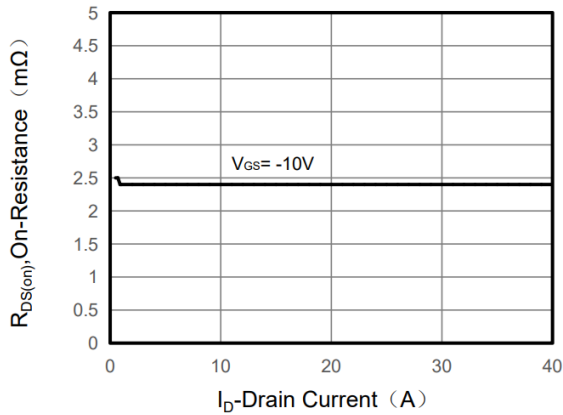
Figure 3. Drain to Source On-Resistance
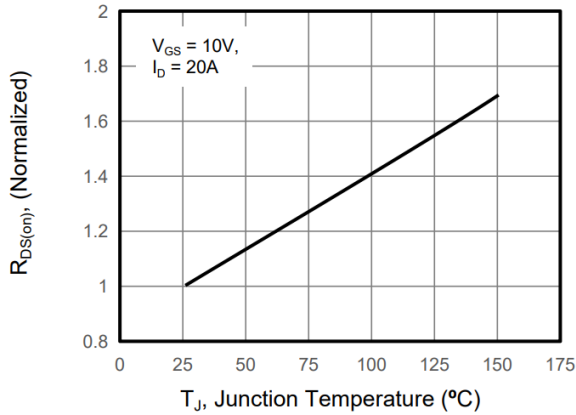

Figure 4. Gate Charge

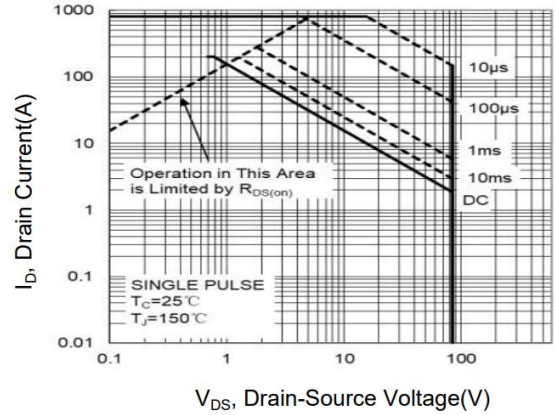**Figure 5. Capacitance Characteristics**

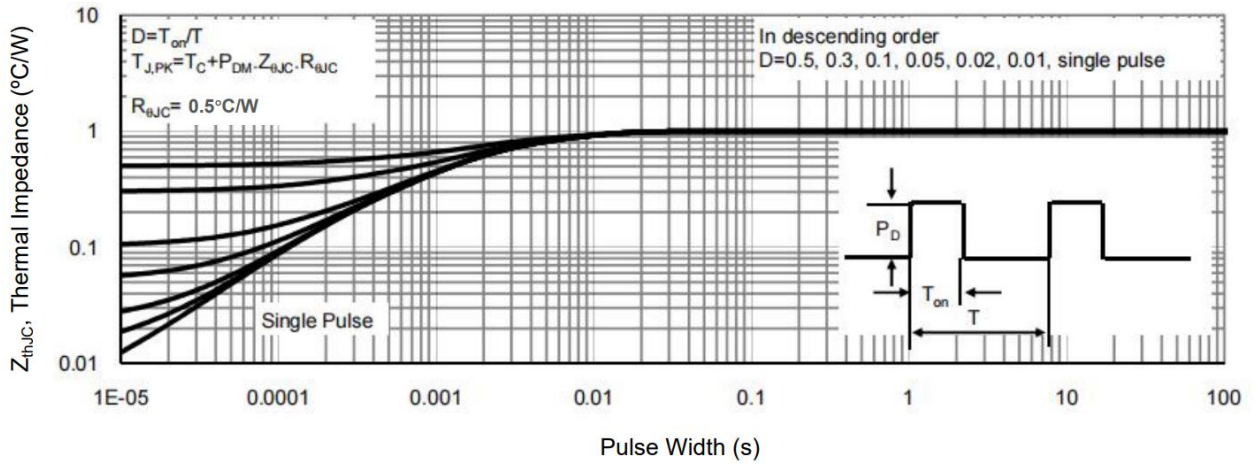**Figure 6. Source to Drain Diode Forward**

Typical Characteristics

Figure 7. Drain to Source On-Resistance

Figure 8. Safe Operation Area

Figure 9. Normalized Maximum Transient Thermal Impedance

Package Outline

Unit : mm