

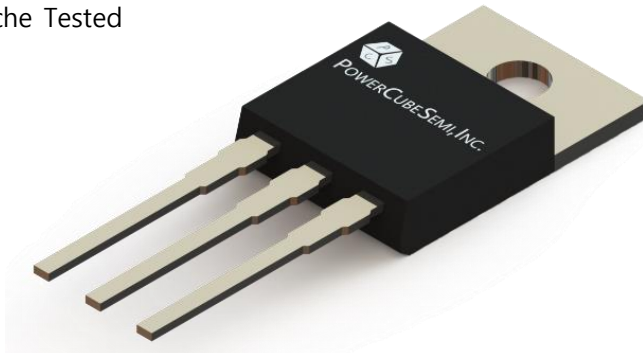
PM003N100AG

100V 190A 3.5mΩ Si Single N-ch Enhancement Mode Power MOSFET with Normal Diode

Features

Si Single N-ch Enhancement Mode Power MOSFET

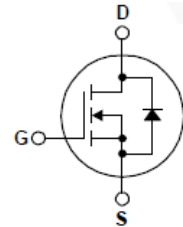
- Rated to 100V at 190Amps @ $T_j = 25^\circ\text{C}$
- Max $R_{DS(on)} = 3.5\text{ m}\Omega$
- Typ $R_{DS(on)} = 2.85\text{ m}\Omega$
- Gate Charge(Typ. $Q_g=68\text{ nC}$)
- 100% Avalanche Tested



PKG type : TO-220

Application

- Power Switch
- DC/DC Converter



Description

The PM003N100AG 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	$V_{GS}=0V, I_D=250\mu A$	100	V
I_D	Drain Current	$T_c=25^\circ\text{C}$	190	A
I_{DM}	Pulsed Drain Current	Pulse width limited by junction temperature	760	A
V_{GS}	Gate-Source Voltage		± 20	V
E_{AS}	Single Pulsed Avalanche Energy	$V_{DD}=50V, V_{GS}=10V, L=0.5mH, R_G=25\Omega$	441	mJ
P_d	Power Dissipation	$T_c=25^\circ\text{C}$	277	W
T_j	Operating Junction Temperature		150	$^\circ\text{C}$
T_{stg}	Storage Temperature		-55 to 150	$^\circ\text{C}$

Package Marking and Ordering Information

Device Marking	Device	Package	Packing Method	Tape width	Quantity
PM003N100AG	PM003N100	TO-220	TUBE	-	50

Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A, T_J = 25^\circ C$	100	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 100V, V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	3.0	4.0	V
$R_{DS(ON)}$	Static Drain-Source on state resistance	$V_{GS} = 10V, I_D = 30A$	-	2.85	3.5	m Ω
g_{FS}	Forward Transconductance	$V_{DS} = 5V, I_D = 30A$	-	65	-	S
$t_{d(on)}$	Turn-on Delay time	$V_{DD} = 50V, I_D = 30A, R_G = 3\Omega$	-	27	-	ns
T_r	Turn-on Rise time		-	21	-	
$t_{d(off)}$	Turn-off Delay time		-	78	-	
T_f	Turn-off Fall time		-	30	-	



Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JC}$	Thermal Resistance, Junction to Case		0.45	-	$^{\circ}\text{C}/\text{W}$
C_{iss}	Input Capacitance	$V_{DS} = 50\text{V}, V_{GS} = 0\text{V},$ $f = 1.0\text{MHz}$	6478	-	pF
C_{oss}	Output Capacitance		2015	-	
C_{rss}	Reverse Transfer Capacitance		166	-	
$Q_{g(\text{tot})}$	Total Gate Charge at 10V	$V_{DD} = 50\text{V}, I_D = 30\text{A}$ $V_{GS(\text{on})} = 10\text{V}$	68	-	nC
Q_{gs}	Gate to Source Gate Charge		26	-	
Q_{gd}	Gate to Drain "Miller" Charge		31	-	

Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	190	A
V_{SD}	Drain to Source Diode Forward Voltage	$I_S = 30\text{A}, V_{GS} = 0\text{V}$	-	1.2	V
T_{rr}	Reverse Recovery Time	$I_F = 30\text{A}, V_{GS} = 0\text{V},$ $di_F/dt = 100\text{A}/\mu\text{s}$	132	-	ns
Q_{rr}	Reverse Recovery Charge		680	-	nC

Typical Characteristics

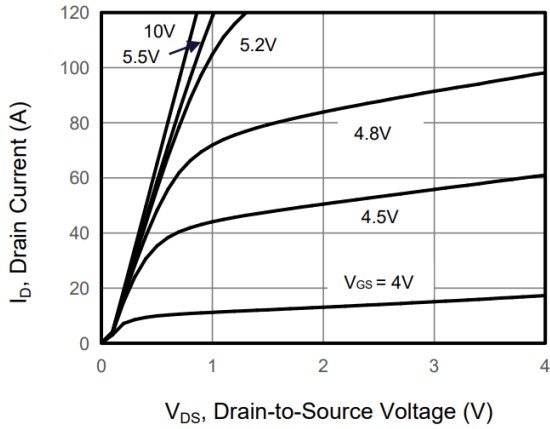


Figure 1. Output Characteristics

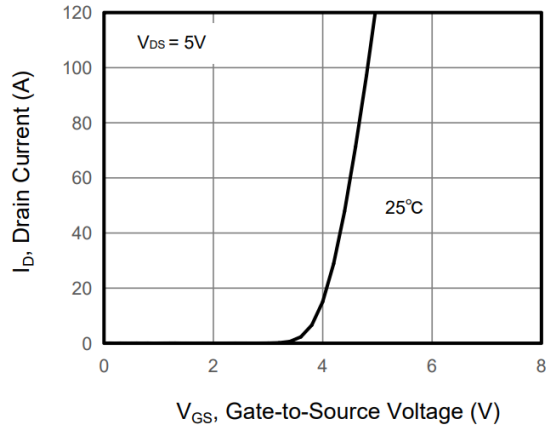


Figure 2. Transfer Characteristics

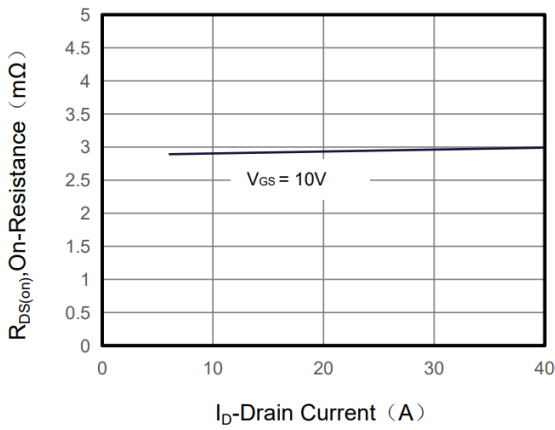


Figure 3. Drain to Source On-Resistance

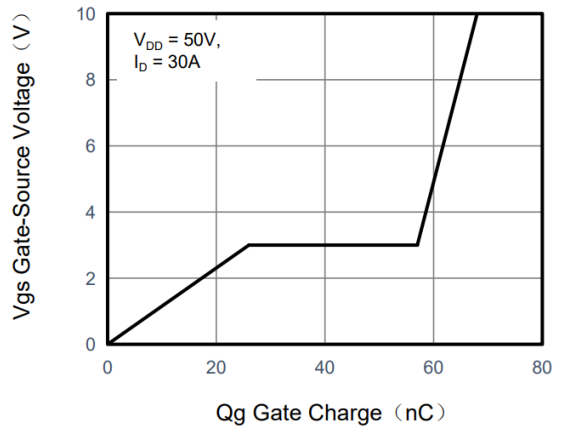


Figure 4. Gate Charge

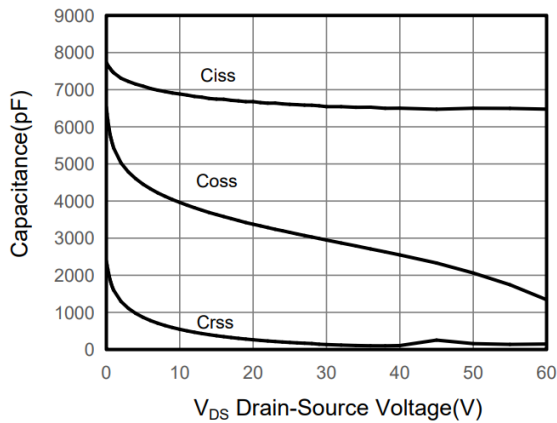


Figure 5. Capacitance Characteristics

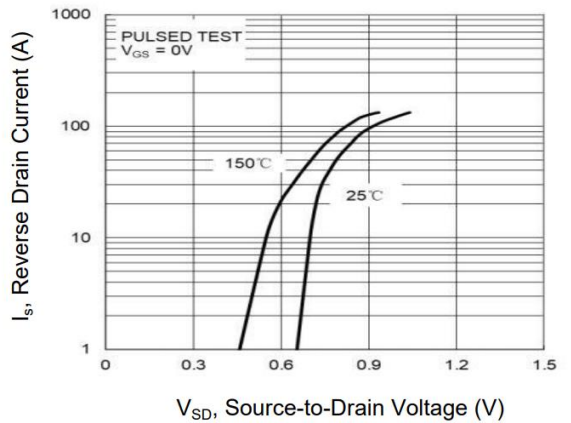


Figure 6. Source to Drain Diode Forward

Typical Characteristics

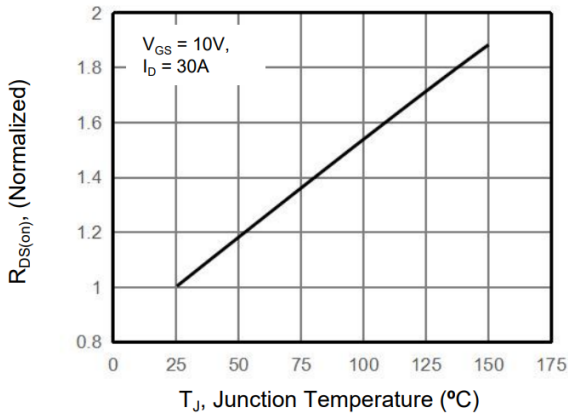


Figure 7. Drain to Source On-Resistance

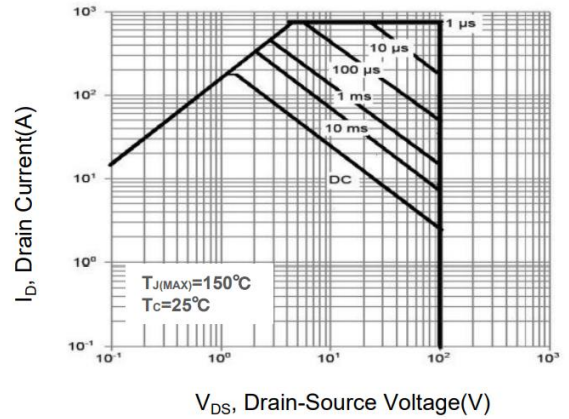


Figure 8. Safe Operation Area

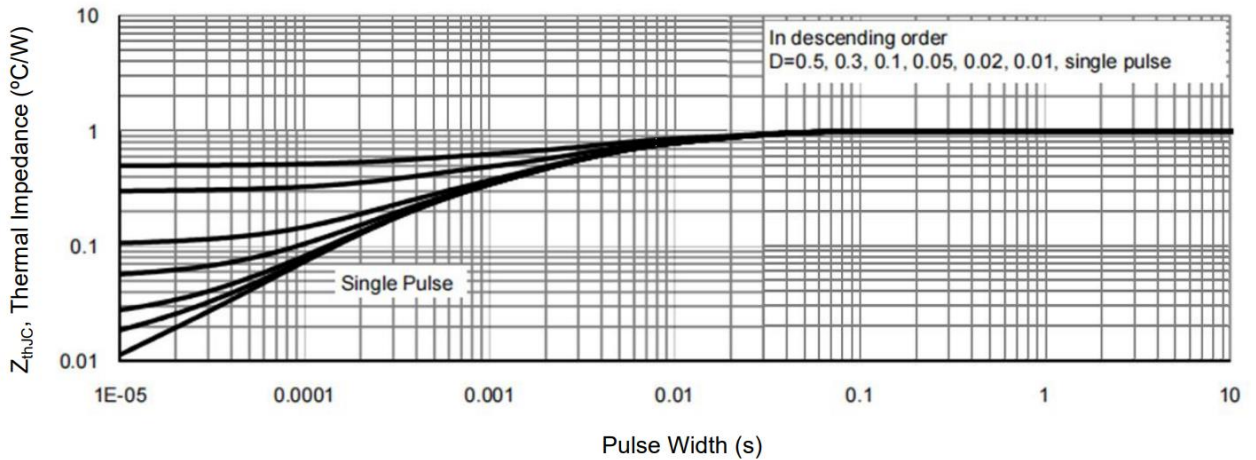


Figure 9. Normalized Maximum Transient Thermal Impedance



Package Outline

Unit : mm

