

# PM005N100AG

100V 120A 5mΩ Si Single N-ch Enhancement Mode Power MOSFET with Normal Diode

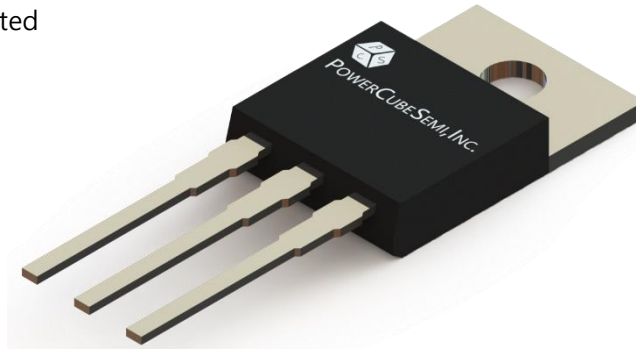
## Features

### Si Single N-ch Enhancement Mode Power MOSFET

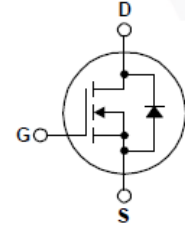
- Rated to 100V at 120Amps @ $T_j = 25^\circ\text{C}$
- Max  $R_{DS(on)} = 5\text{ m}\Omega$
- Typ  $R_{DS(on)} = 3.95\text{ m}\Omega$
- Gate Charge(Typ.  $Q_g=60\text{ nC}$ )
- 100% Avalanche Tested

## Application

- DC-DC Converters
- Power switch



PKG type : TO-220



## Description

The PM005N100AG 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	$T_c=25^\circ\text{C}$	120	A
$I_{DM}$	Pulsed Drain Current	Pulse width limited by junction temperature	480	A
$V_{GS}$	Gate-Source Voltage		$\pm 20$	V
$E_{AS}$	Single Pulsed Avalanche Energy	$V_{DD}=50V, V_{GS}=10V, L=0.5mH, R_G=25\Omega, T_j=25^\circ\text{C}$	240	mJ
$P_d$	Power Dissipation	$T_c=25^\circ\text{C}$	180	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
PM005N100AG	PM005N100	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	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	$\pm 100$	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3	4	V
$R_{DS(ON)}$	Static Drain-Source on state resistance	$V_{GS} = 10V, I_D = 30A$	-	3.95	5	m $\Omega$
$g_{FS}$	Forward Transconductance	$V_{DS} = 5V, I_D = 30A$	-	44	-	S
$t_{d(on)}$	Turn-on Delay time	$V_{DD} = 50V, I_D = 30A, R_G = 4.7\Omega$	-	58	-	ns
$T_r$	Turn-on Rise time		-	13	-	
$t_{d(off)}$	Turn-off Delay time		-	39	-	
$T_f$	Turn-off Fall time		-	8	-	



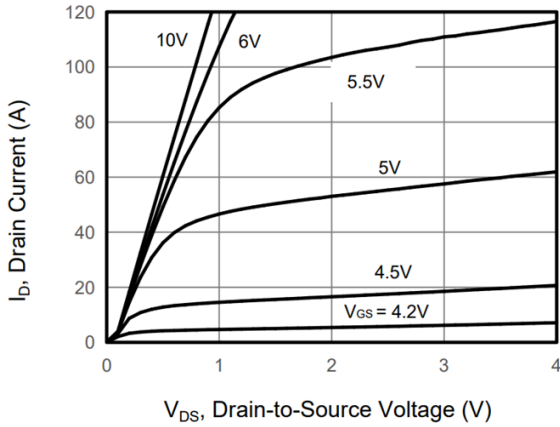
## Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JC}$	Thermal resistance, Junction to case		0.69	-	$^{\circ}\text{C}/\text{W}$
$C_{iss}$	Input capacitance	$V_{DS} = 50\text{V}, V_{GS} = 0\text{V},$ $f = 1.0\text{MHz}$	4280	-	pF
$C_{oss}$	Output capacitance		1337	-	
$C_{rss}$	Reverse transfer capacitance		23	-	
$Q_{g(\text{tot})}$	Total gate charge at 10V	$V_{DD} = 50\text{V}, I_D = 30\text{A}$ $V_{GS(\text{on})} = 10\text{V}$	60	-	nC
$Q_{gs}$	Gate to source gate charge		21	-	
$Q_{gd}$	Gate to drain "Miller" charge		11	-	

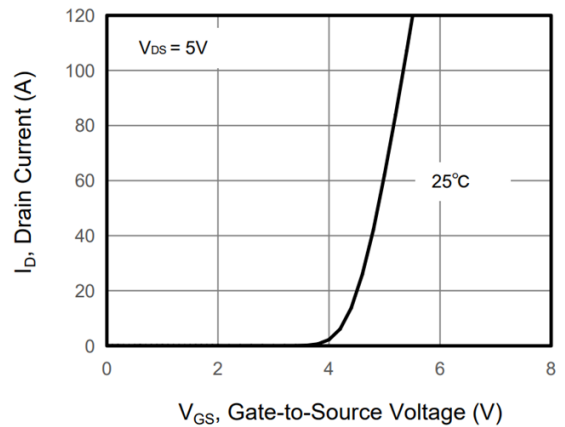
## Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$I_S$	Maximum continuous drain to source diode forward current		-	120	A
$V_{SD}$	Drain to source diode forward voltage	$I_{SD} = 30\text{A}, V_{GS} = 0\text{V}$	-	1.2	V
$T_{rr}$	Reverse recovery time	$I_F = 30\text{A}, V_{GS} = 0\text{V},$ $di/dt = 100\text{A}/\mu\text{s}$	60	-	ns
$Q_{rr}$	Reverse recovery charge		140	-	nC

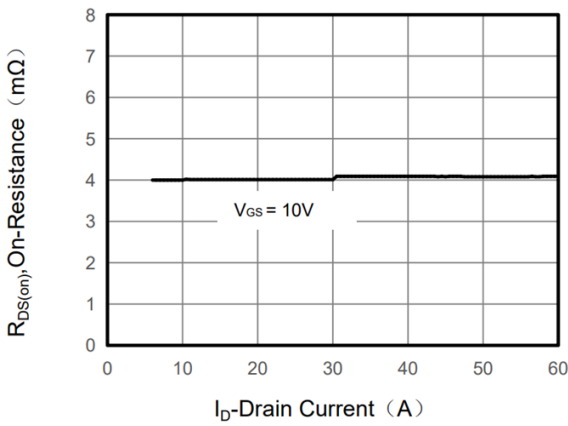
# Typical Characteristics



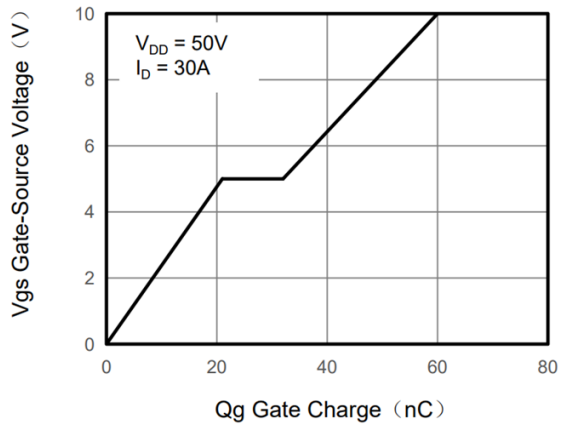
**Figure 1. Output Characteristics**



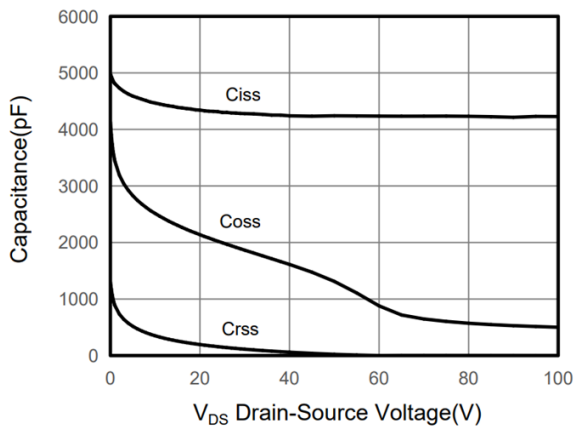
**Figure 2. Transfer Characteristics**



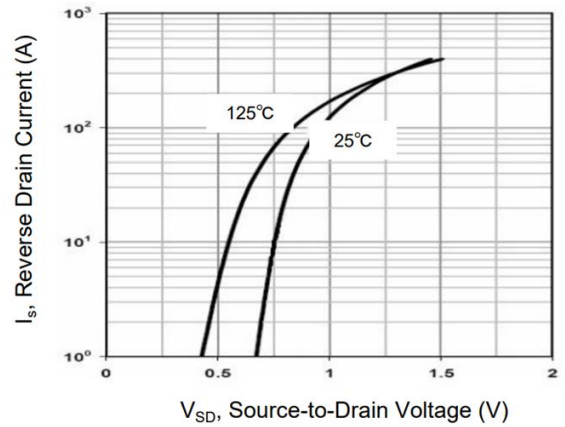
**Figure 3. Drain to Source On-Resistance**



**Figure 4. Gate Charge**

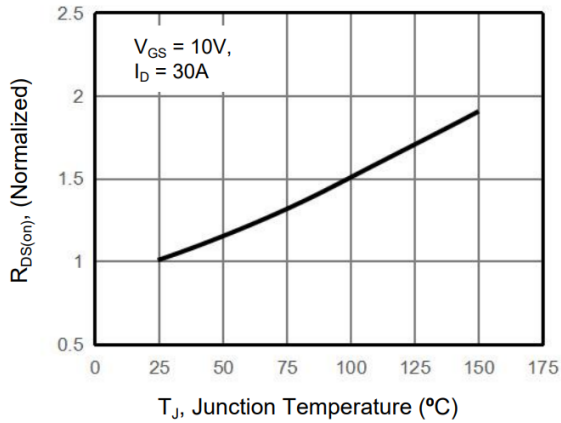


**Figure 5. Capacitance Characteristics**

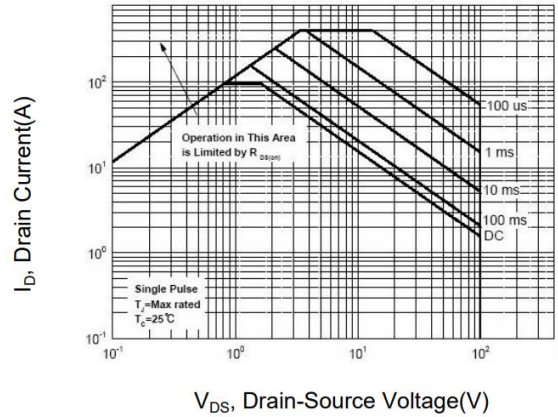


**Figure 6. Source to Drain Diode Forward**

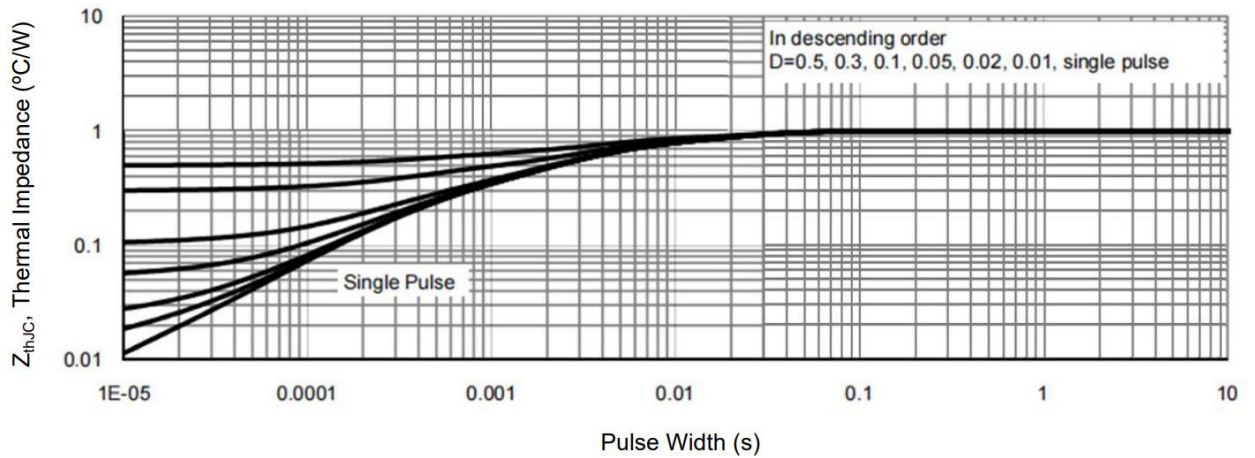
# Typical Characteristics



**Figure 7. Drain to Source On-Resistance**



**Figure 8. Safe Operation Area**



**Figure 9. Normalized Maximum Transient Thermal Impedance**

## Package Outline

Unit : mm

