

# PM006N060AG

60V 110A 6.4mΩ Si Single N-ch Enhancement Mode Power MOSFET with Normal Diode

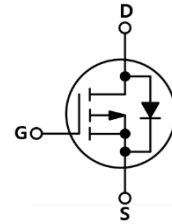
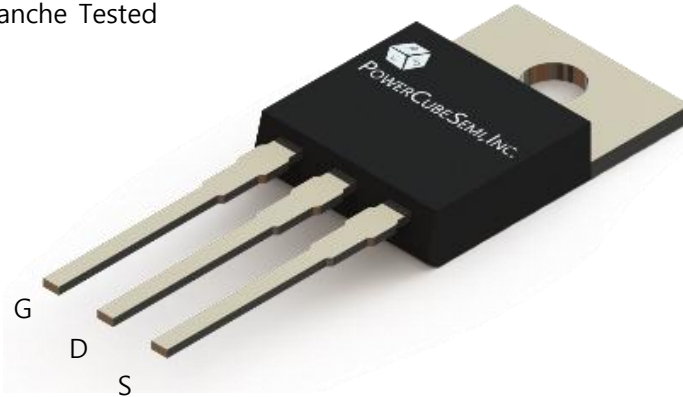
## Features

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

- Rated to 60V at 110Amps @ $T_j = 25^\circ\text{C}$
- Max  $R_{DS(on)} = 6.4\text{ m}\Omega$
- Typ  $R_{DS(on)} = 5.0\text{ m}\Omega$
- Gate Charge(Typ.  $Q_g=122\text{ nC}$ )
- 100% Avalanche Tested

## Application

- Power switch
- DC/DC converters



PKG type : TO-220

## Description

The PM006N060CG 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	$V_{GS}=0V, I_D=250\mu A$	60	V
$I_D$	Drain current	$T_c=25^\circ\text{C}$	110	A
$I_{DM}$	Drain current	Pulse width limited by junction temperature	440	A
$V_{GS}$	Gate-source voltage		$\pm 20$	V
$E_{AS}$	Single pulsed avalanche energy	$V_{GS}=10V, R_G=25\Omega$ $V_{DD}=50V, L=0.5mH$	156	mJ
$P_d$	Power dissipation	$T_c=25^\circ\text{C}$	160	W
$T_j$	Operating junction		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
PM006N060CG	PM006N060	TO-220	TUBE	-	50

## Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
$BV_{DSS}$	Drain-source breakdown voltage	$V_{GS} = 0V, I_D = 250\mu A, T_J = 25^\circ C$	60	-	-	V
$I_{DSS}$	Zero gate voltage drain current	$V_{DS} = 60V, V_{GS} = 0V$	-	-	1	$\mu A$
$I_{GSS}$	Gate-source leakage current	$V_{GS} = \pm 20V$	-	-	$\pm 100$	nA
$V_{GS(th)}$	Gate threshold voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.6	2.5	V
$R_{DS(ON)}$	Static drain-source on state resistance	$V_{GS} = 10V, I_D = 20A$	-	5.0	6.4	m $\Omega$
$g_{FS}$	Forward transconductance	$V_{DS} = 5V, I_D = 20A$	-	20	-	S
$t_{d(on)}$	Turn-on Delay time	$V_{DD} = 30V, I_D = 20A, R_G = 2.5\Omega$	-	15	-	ns
$t_r$	Turn-on Rise time		-	13	-	
$t_{d(off)}$	Turn-off Delay time		-	32	-	
$t_f$	Turn-off Fall time		-	27	-	

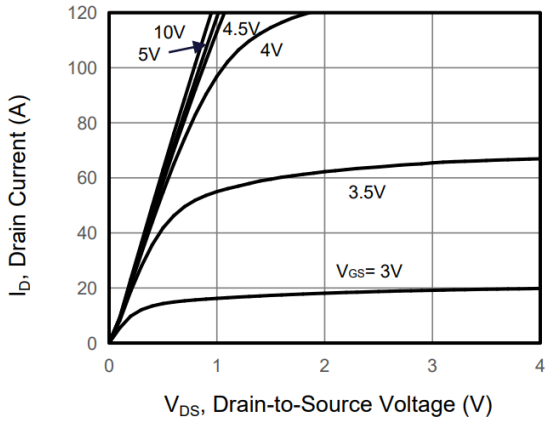
## Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JC}$	Thermal resistance, Junction to case		0.78	-	$^{\circ}\text{C}/\text{W}$
$C_{iss}$	Input capacitance	$V_{DS} = 30\text{V}, V_{GS} = 0\text{V},$ $f = 1.0\text{MHz}$	4885	-	pF
$C_{oss}$	Output capacitance		323	-	
$C_{rss}$	Reverse transfer capacitance		308	-	
$Q_{g(\text{tot})}$	Total gate charge at 10V	$V_{DD} = 30\text{V}, I_D = 20\text{A}$ $V_{GS} = 10\text{V}$	122	-	nC
$Q_{gs}$	Gate to source gate charge		17	-	
$Q_{gd}$	Gate to drain "Miller" charge		27	-	

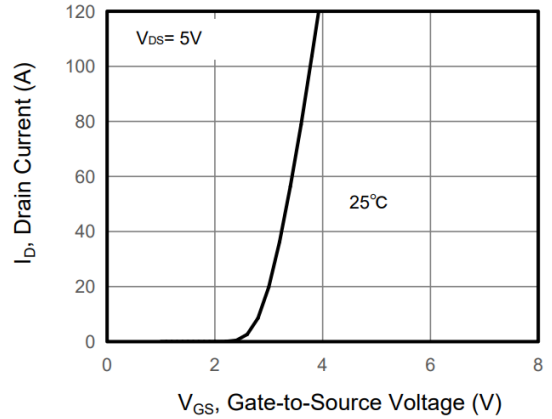
## Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$I_S$	Maximum continuous drain to source diode forward current	$T_c = 25^{\circ}\text{C}$	-	110	A
$V_{SD}$	Drain to source diode forward voltage	$I_{SD} = 20\text{A}, V_{GS} = 0\text{V}$	-	1.2	V
$T_{rr}$	Reverse recovery time	$I_F = 20\text{A}, V_{GS} = 0\text{V},$ $dI_F/dt = 100\text{A}/\mu\text{s}$	56	-	ns
$Q_{rr}$	Reverse recovery charge		59	-	nC

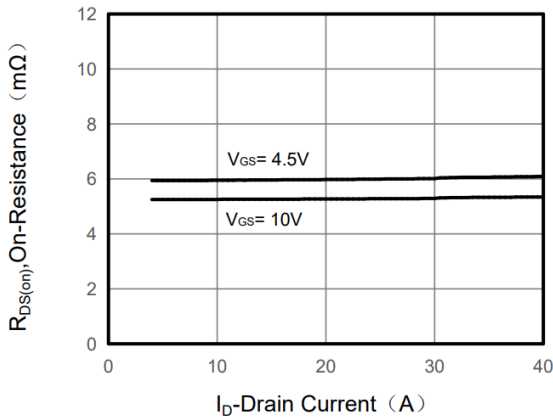
# Typical Characteristics



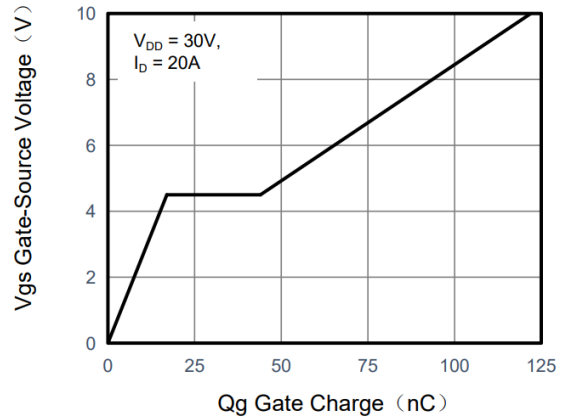
**Figure 1. Output Characteristics**



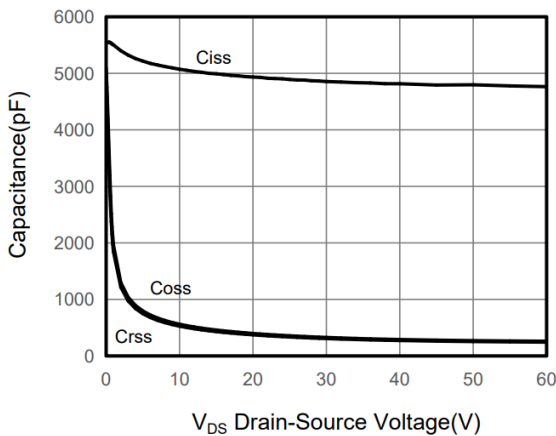
**Figure 2. Transfer Characteristics**



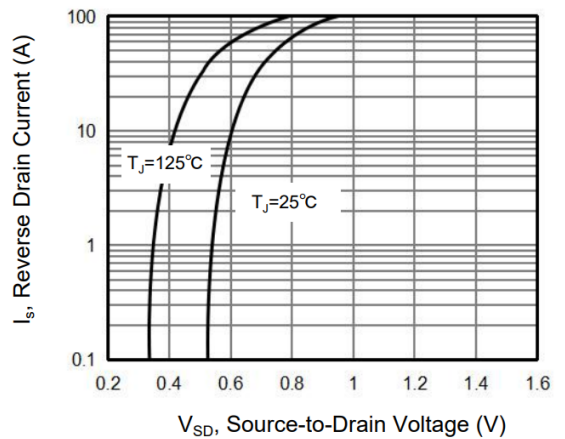
**Figure 3. Drain to Source On-Resistance**



**Figure 4. Gate Charge**



**Figure 5. Capacitance Characteristics**



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

# Typical Characteristics

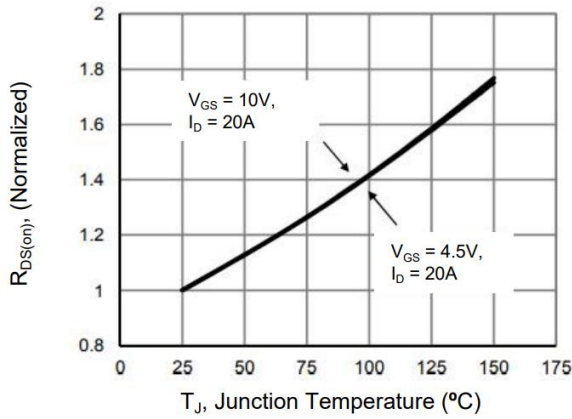


Figure 7. Drain to Source On-Resistance

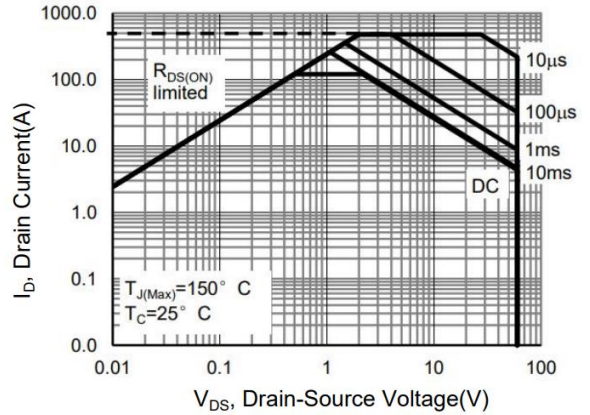


Figure 8. Safe Operation Area

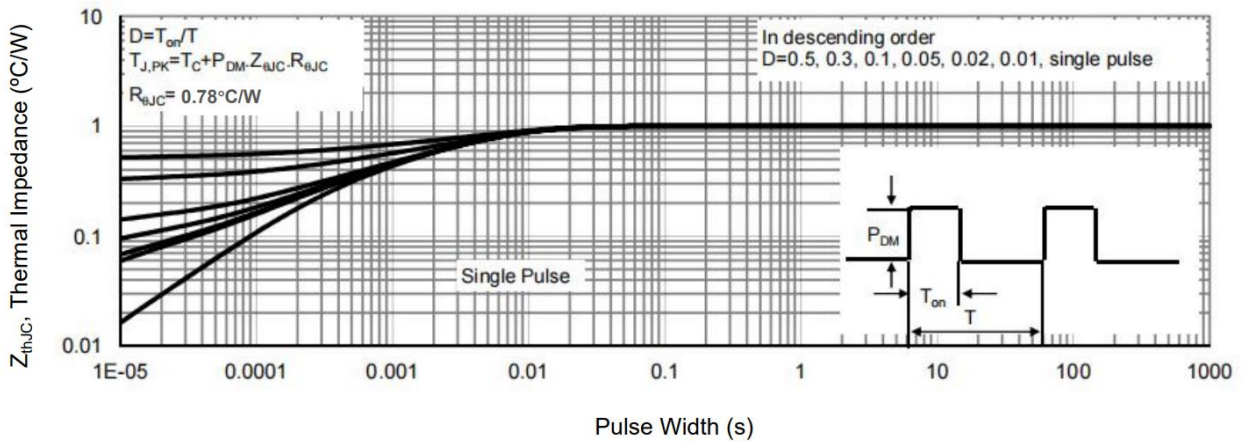


Figure 9. Normalized Maximum Transient Thermal Impedance



### Package Outline

Unit : mm

