

# PM018P060HG

-60V -65A 18mΩ Si Single P-ch Enhancement Mode Power MOSFET with Normal Diode

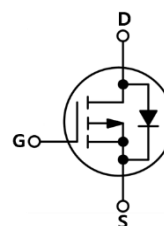
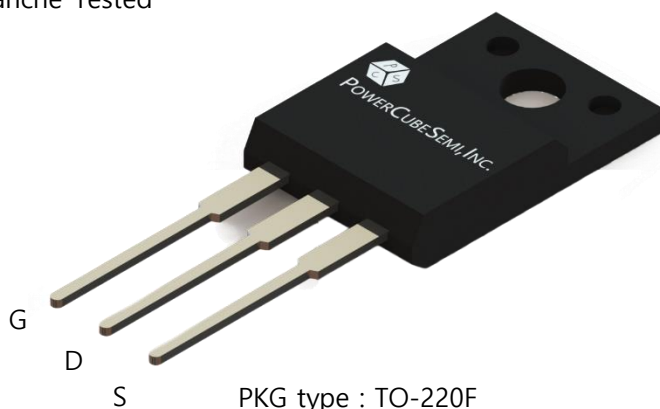
## Features

### Si P-Channel Power MOSFET

- Rated to -60V at -65Amps @ $T_J = 25^{\circ}\text{C}$
- Max  $R_{DS(on)} = 18\text{ m}\Omega$
- Typ  $R_{DS(on)} = 13\text{ m}\Omega$
- Gate Charge(Typ.  $Q_g=75\text{ nC}$ )
- 100% Avalanche Tested

## Application

- Power switch
- DC/DC converters



## Description

The PM018P060HG 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	$T_c=25^{\circ}\text{C}$	-65	A
$I_{DM}$	Drain current	Pulse width limited by junction temperature	-260	A
$V_{GS}$	Gate-source voltage		$\pm 20$	V
$E_{AS}$	Single pulsed avalanche energy	$V_{GS}=10V, R_G=25\Omega$ $V_{DD}=50V, L=0.5mH$	225	mJ
$P_d$	Power dissipation	$T_c=25^{\circ}\text{C}$	39	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
PM018P060HG	PM018P060	TO-220F	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	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	$\pm 100$	nA
$V_{GS(th)}$	Gate threshold voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	-2	-2.6	-3.5	V
$R_{DS(ON)}$	Static drain-source on state resistance	$V_{GS} = -10V, I_D = -20A$	-	13	18	m $\Omega$
$g_{FS}$	Forward transconductance	$V_{DS} = -5V, I_D = -20A$	-	37	-	S
$t_{d(on)}$	Turn-on Delay time	$V_{DD} = -30V, I_D = -30A, R_G = 3\Omega$	-	18	-	ns
$t_r$	Turn-on Rise time		-	20	-	
$t_{d(off)}$	Turn-off Delay time		-	55	-	
$t_f$	Turn-off Fall time		-	35	-	



## Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JC}$	Thermal resistance, Junction to case		3.2	-	$^{\circ}\text{C}/\text{W}$
$C_{iss}$	Input capacitance	$V_{DS} = -25\text{V}, V_{GS} = 0\text{V},$ $f = 1.0\text{MHz}$	6477	-	pF
$C_{oss}$	Output capacitance		337	-	
$C_{rss}$	Reverse transfer capacitance		350	-	
$Q_{g(tot)}$	Total gate charge at 10V	$V_{DD} = -30\text{V}, I_D = -20\text{A}$ $V_{GS} = -10\text{V}$	75	-	nC
$Q_{gs}$	Gate to source gate charge		16	-	
$Q_{gd}$	Gate to drain "Miller" charge		19	-	

## Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$I_S$	Maximum continuous drain to source diode forward current	$T_c = 25^{\circ}\text{C}$	-	-65	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	$I_F = -20\text{A}, V_{GS} = 0\text{V},$ $di_F/dt = 100\text{A}/\mu\text{s}$	0.13	-	ns
$Q_{rr}$	Reverse recovery charge		0.77	-	nC

## Typical Characteristics

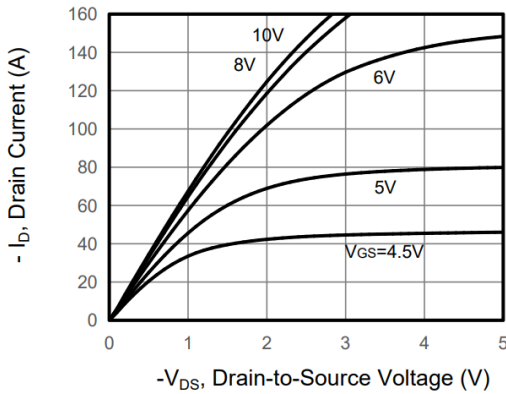


Figure 1. Output Characteristics

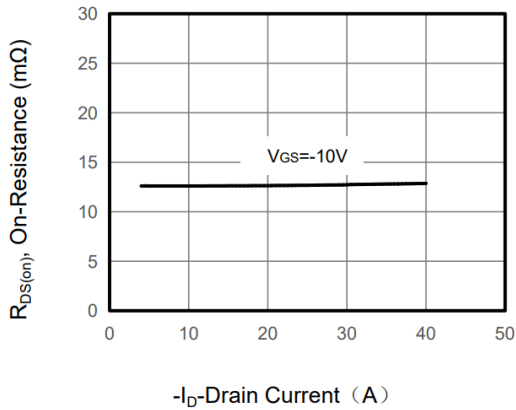


Figure 3. Drain Source On Resistance

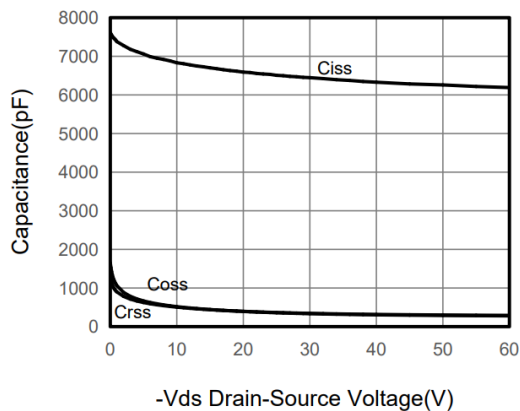


Figure 5. Capacitance

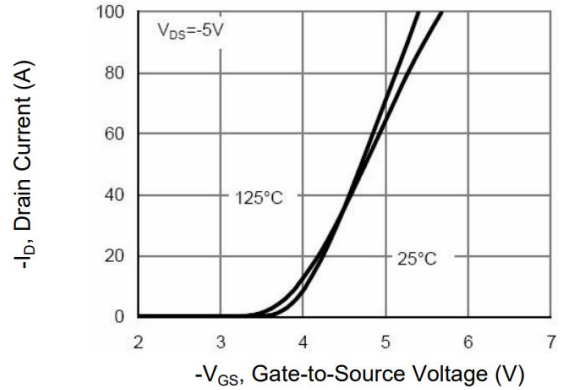


Figure 2. Transfer Characteristics

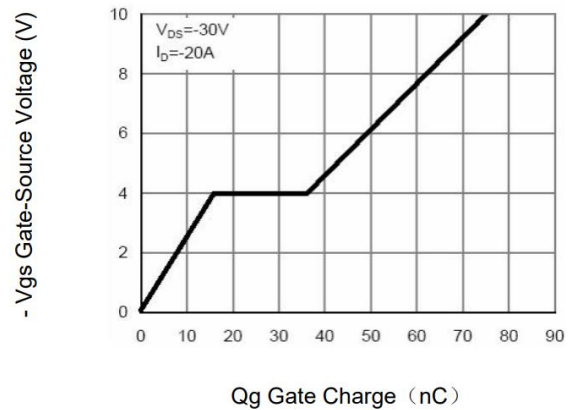


Figure 4. Gate Charge

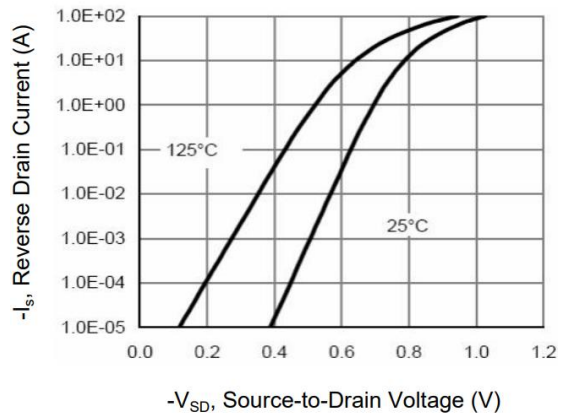


Figure 6. Source-Drain Diode Forward

## Typical Characteristics

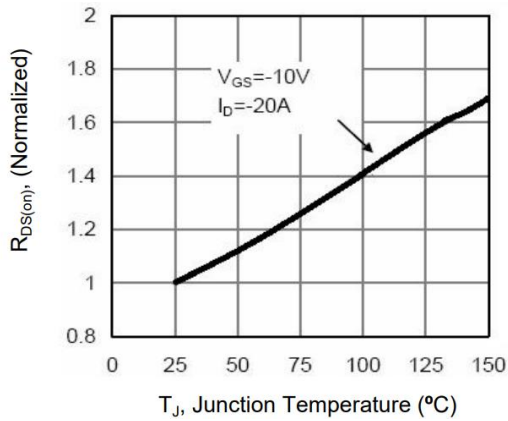


Figure 7. Drain-Source On-Resistance

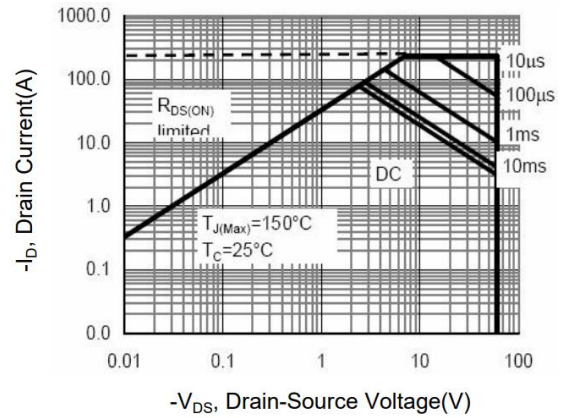


Figure 8. Safe Operation Area

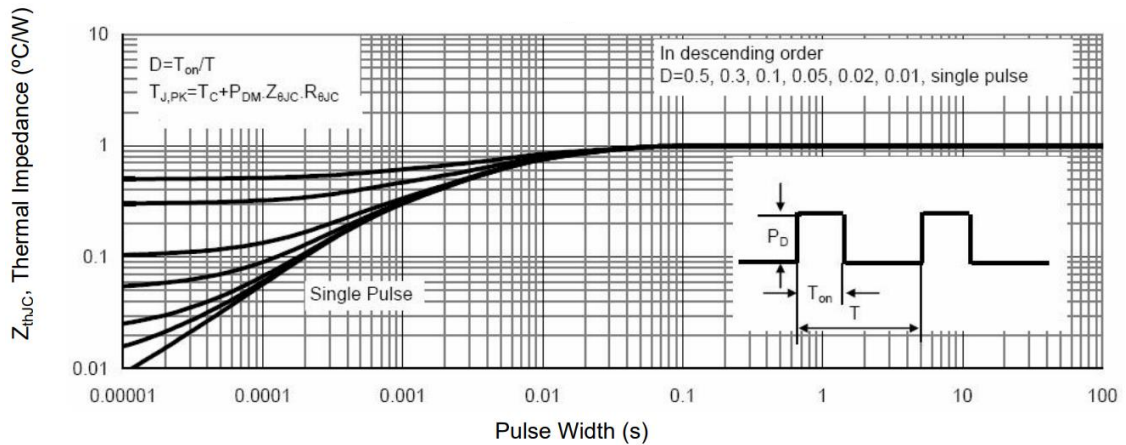
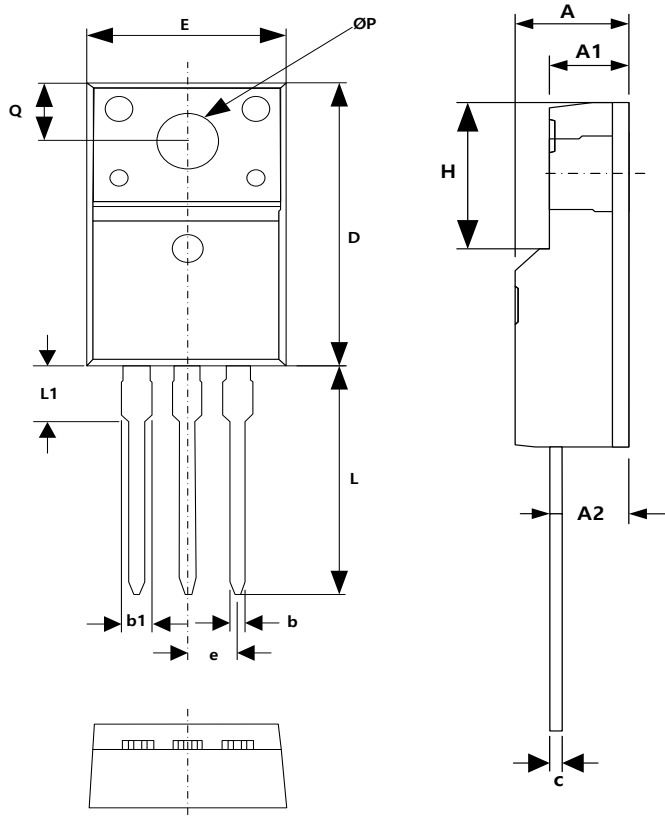


Figure 9. Normalized Maximum Transient Thermal Impedance

## Package Outline

Unit : mm



SYMBOL	DIMENSIONS		
	MIN	NOM	MAX
A	4.60	4.70	4.80
A1	2.44	2.54	2.64
A2	2.15	2.45	2.75
b	0.70	0.80	0.90
b1	1.15	1.35	1.55
c	0.50	0.60	0.70
D	15.30	15.80	16.30
E	9.90	10.10	10.30
e	4.98	5.08	5.18
H	6.40	6.60	6.80
L	13.05	13.55	14.05
L1	3.00	3.30	3.60
ØP	3.00	3.20	3.40
Q	3.10	3.30	3.50