



### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
-30V	2.3m $\Omega$ @-10V	-90A
	3.6m $\Omega$ @-4.5V	

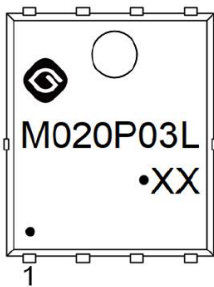
### Feature

- Trench Technology Power MOSFET
- Low  $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

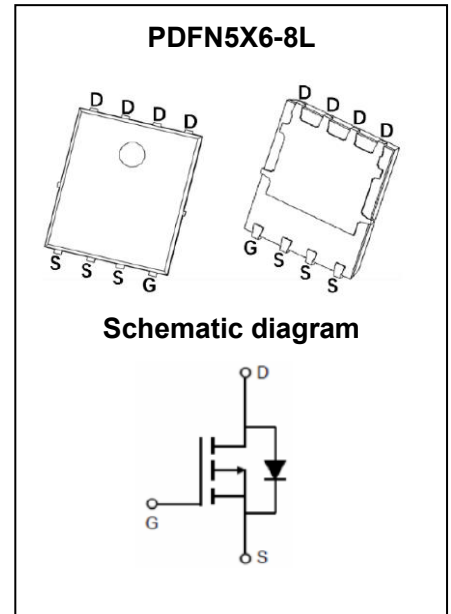
### Application

- Power Switching Application

### MARKING:



M020P03L = Device Code  
XX = Date Code  
Solid Dot = Green Indicator



### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain - Source Voltage	$V_{DS}$	-30	V
Gate - Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>1</sup>	$T_C = 25^\circ\text{C}$	$I_D$	-90
	$T_C = 100^\circ\text{C}$	$I_D$	-58
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	-360	A
Single Pulsed Avalanche Current <sup>3</sup>	$I_{AS}$	-68	A
Single Pulsed Avalanche Energy <sup>3</sup>	$E_{AS}$	1156	mJ
Power Dissipation <sup>5</sup>	$T_C = 25^\circ\text{C}$	$P_D$	83
Thermal Resistance from Junction to Ambient <sup>6</sup>	$R_{\theta JA}$	55	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case	$R_{\theta JC}$	1.5	$^\circ\text{C/W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55~ +150	$^\circ\text{C}$

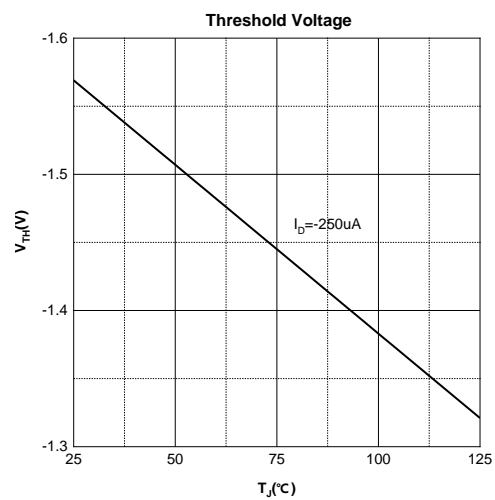
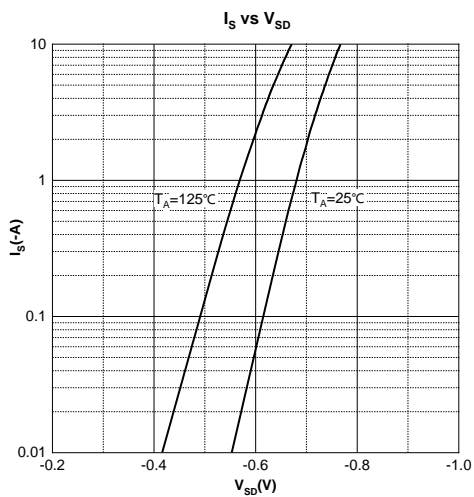
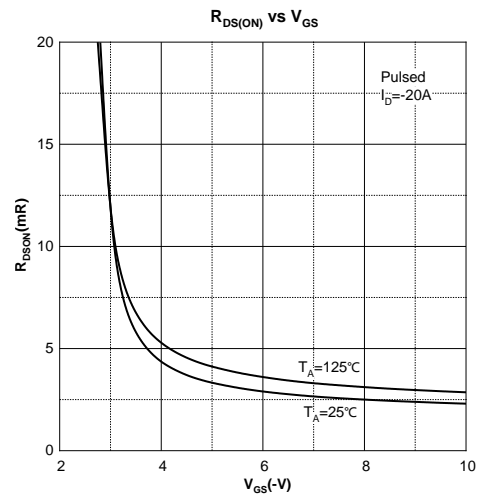
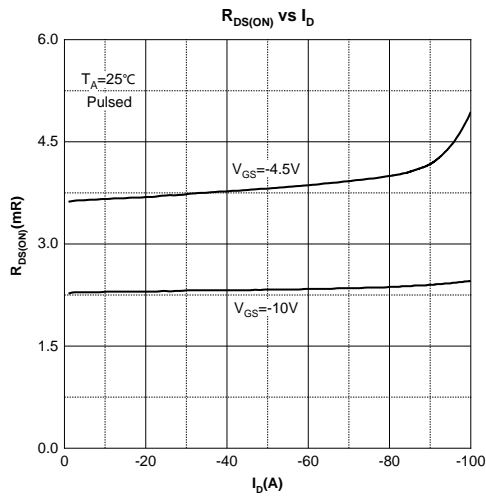
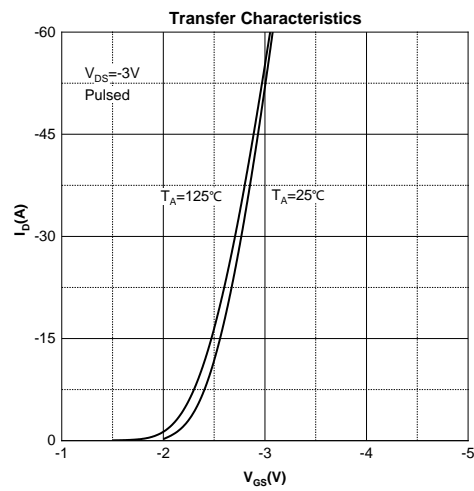
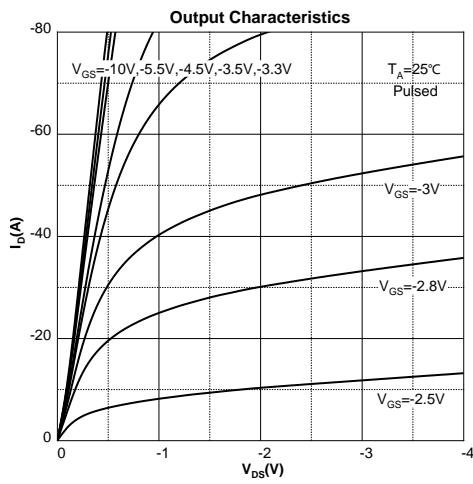
## MOSFET ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

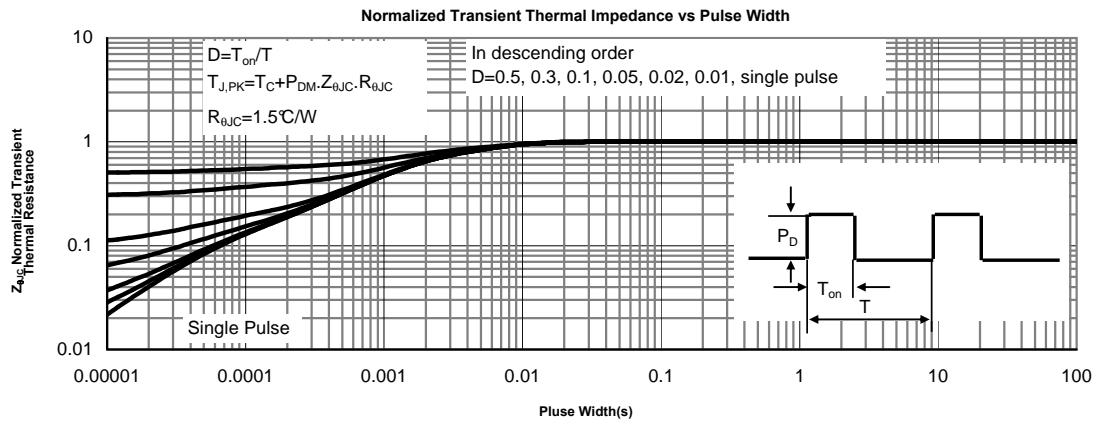
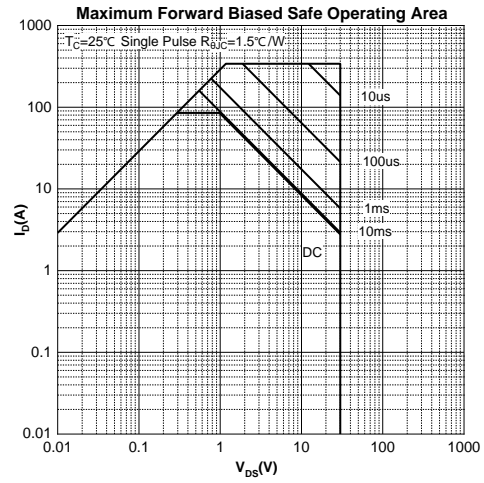
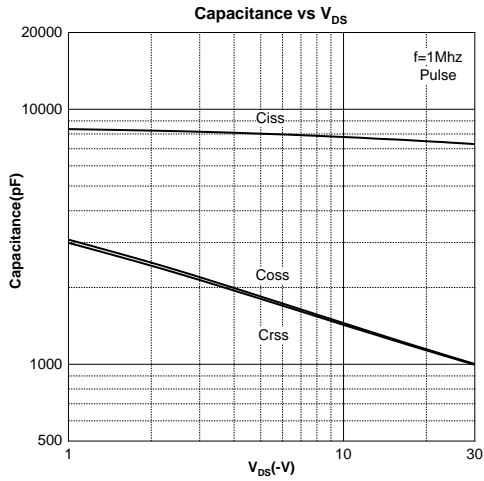
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Off Characteristics</b>						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -30V, V_{GS} = 0V$			-1	$\mu A$
Gate - Body Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	nA
<b>On Characteristics<sup>4</sup></b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1	-1.6	-3	V
Drain-source On-resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -20A$		2.3	5.9	m $\Omega$
		$V_{GS} = -4.5V, I_D = -20A$		3.6	7.9	
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = -15V, V_{GS} = 0V, f = 1MHz$		7559		pF
Output Capacitance	$C_{oss}$			1256		
Reverse Transfer Capacitance	$C_{rss}$			1237		
Gate Resistance	$R_g$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		2.6		$\Omega$
<b>Switching Characteristics</b>						
Total Gate Charge	$Q_g$	$V_{DS} = -20V, V_{GS} = -10V, I_D = -15A$		158		nC
Gate-source Charge	$Q_{gs}$			18		
Gate-drain Charge	$Q_{gd}$			42		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = -15V, V_{GS} = -10V,$ $R_L = 0.75\Omega, R_G = 3\Omega$		15		ns
Turn-on Rise Time	$t_r$			20		
Turn-off Delay Time	$t_{d(off)}$			135		
Turn-off Fall Time	$t_f$			54		
<b>Source - Drain Diode Characteristics</b>						
Diode Forward Voltage <sup>4</sup>	$V_{SD}$	$V_{GS} = 0V, I_S = -20A$			-1.2	V

Notes :

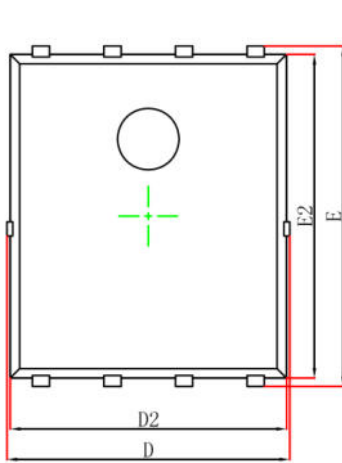
- 1.The maximum current rating is limited by package, And device mounted on a large heatsink
- 2.Pulse Test : Pulse Width  $\leq 10\mu s$ , duty cycle  $\leq 1\%$ .
- 3.EAS condition:  $V_{DD} = -35V, V_{GS} = -10V, L = 0.5mH, R_G = 25\Omega$  Starting  $T_J = 25^\circ\text{C}$ .
- 4.Pulse Test : Pulse Width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
- 5.The power dissipation  $P_D$  is limited by  $T_{J(MAX)} = 150^\circ\text{C}$ .And device mounted on a large heatsink
- 6.Device mounted on  $1in^2$  FR-4 board with 2oz. Copper, in a still air environment with  $T_A = 25^\circ\text{C}$ .

**Typical Characteristics**

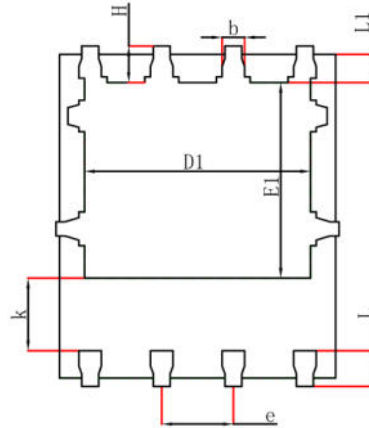




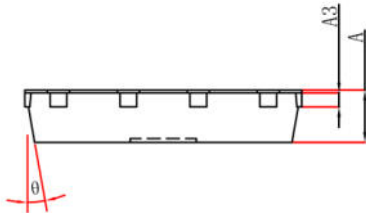
PDFN5X6-8L Package Information



Top View  
[顶视图]



Bottom View  
[背视图]



Side View  
[侧视图]

Gna Vc`	8 ja Ybg]cbg`-b`A ]`ja YNfg		8 ja Ybg]cbg`-b`-bW Yg	
	A ]b"	A U "	A ]b"	A U "
OE	€€€€	F€€€	€€€€ Á	€€€€ HÁ
OEH	€€€   ÜØØ		€€€€ ÜØØ	
Ö	I €€€€	Í €€€€	€€€€ Í Á	€€€€ Í Á
Ò	Í €€€€	Î €€€€	€€€€ Í Á	€€€€ Î Á
ÖF	H€€€€	I €€€€	€€€€ €Á	€€€€ Í Á
ÒF	H€€€€	H€€€€	€€€€ G Á	€€€€ I Á
ÖG	I €€€€	Í €€€€	€€€€ Í Á	€€€€ FÁ
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