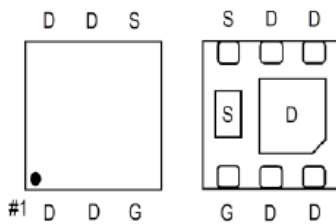


# PB521BX

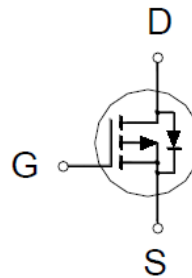
## P-Channel Enhancement Mode MOSFET

### PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	$I_D$
-20V	21m $\Omega$ @ $V_{GS} = -4.5V$	-7.4A



PDFN 2X2S



### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		$V_{DS}$	-20	V
Gate-Source Voltage		$V_{GS}$	$\pm 8$	
Continuous Drain Current	$T_A = 25\text{ }^\circ\text{C}$	$I_D$	-8	A
	$T_A = 70\text{ }^\circ\text{C}$		-6.4	
Pulsed Drain Current <sup>1</sup>		$I_{DM}$	29	
Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	$P_D$	2.1	W
	$T_A = 70\text{ }^\circ\text{C}$		1.4	
Operating Junction & Storage Temperature Range		$T_j, T_{stg}$	-55 to 150	$^\circ\text{C}$

### THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient <sup>2</sup>	$R_{\theta JA}$		57	$^\circ\text{C} / \text{W}$

<sup>1</sup>Pulse width limited by maximum junction temperature.

<sup>2</sup>The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Coppe.

# PB521BX

## P-Channel Enhancement Mode MOSFET

### ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
<b>STATIC</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-20			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-0.45	-0.6	-0.85	
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±8V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -16V, V <sub>GS</sub> = 0V			-1	μA
		V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 55°C			-10	
Drain-Source On-State Resistance <sup>1</sup>	R <sub>DS(ON)</sub>	V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -1A		24	40	mΩ
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -2A		19	28	
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2.5A		15	21	
Forward Transconductance <sup>1</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -10V, I <sub>D</sub> = -2.5A		21		S
<b>DYNAMIC</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = -10V, f = 1MHz		1727		pF
Output Capacitance	C <sub>oss</sub>			179		
Reverse Transfer Capacitance	C <sub>rss</sub>			155		
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 0V, f = 1MHz		10		Ω
Total Gate Charge <sup>2</sup>	Q <sub>g</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2.5A		21		nC
Gate-Source Charge <sup>2</sup>	Q <sub>gs</sub>			1.8		
Gate-Drain Charge <sup>2</sup>	Q <sub>gd</sub>			4.9		
Turn-On Delay Time <sup>2</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> = -10V I <sub>D</sub> ≅ -2.5A, V <sub>GEN</sub> = -4.5V, R <sub>G</sub> = 6Ω		28		nS
Rise Time <sup>2</sup>	t <sub>r</sub>			21		
Turn-Off Delay Time <sup>2</sup>	t <sub>d(off)</sub>			81		
Fall Time <sup>2</sup>	t <sub>f</sub>			48		
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>J</sub> = 25 °C)</b>						
Continuous Current	I <sub>S</sub>				-1.7	A
Forward Voltage <sup>1</sup>	V <sub>SD</sub>	I <sub>F</sub> = -2.5A, V <sub>GS</sub> = 0V			-1.2	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = -2.5A, dI <sub>F</sub> /dt = 100A / μS		35		nS
Reverse Recovery Charge	Q <sub>rr</sub>				18	

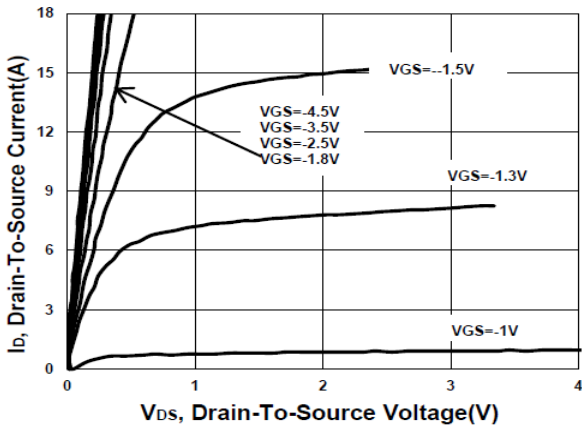
<sup>1</sup>Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

<sup>2</sup>Independent of operating temperature.

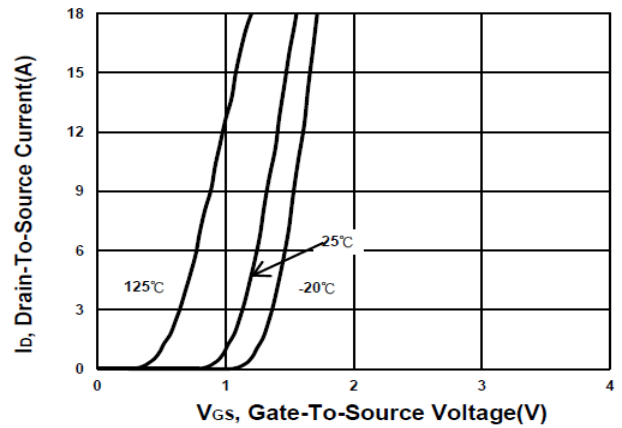
# PB521BX

## P-Channel Enhancement Mode MOSFET

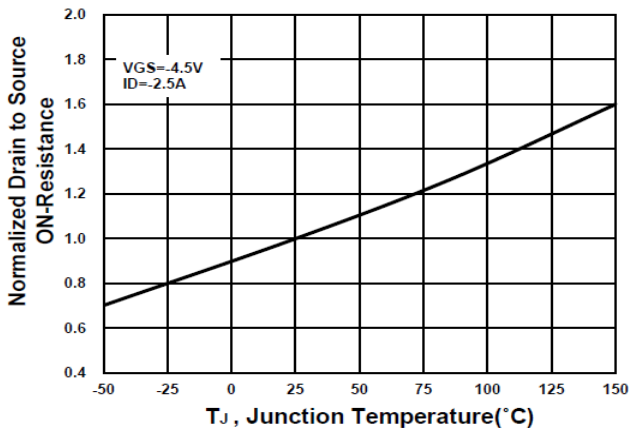
**Output Characteristics**



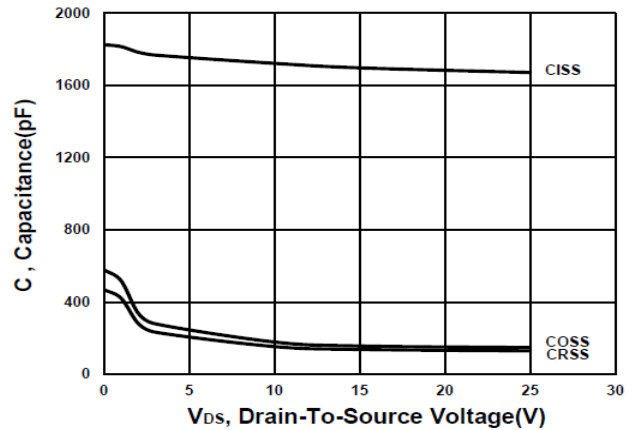
**Transfer Characteristics**



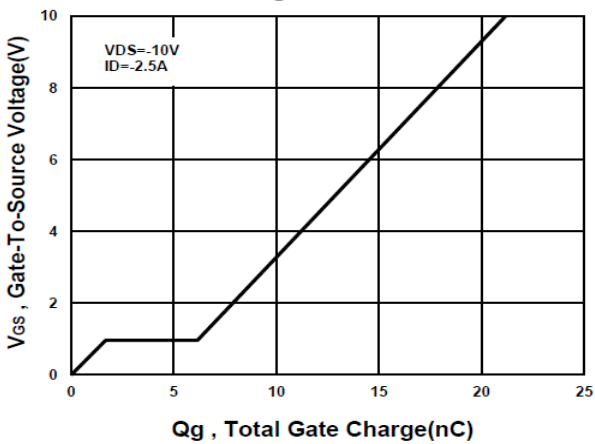
**On-Resistance VS Temperature**



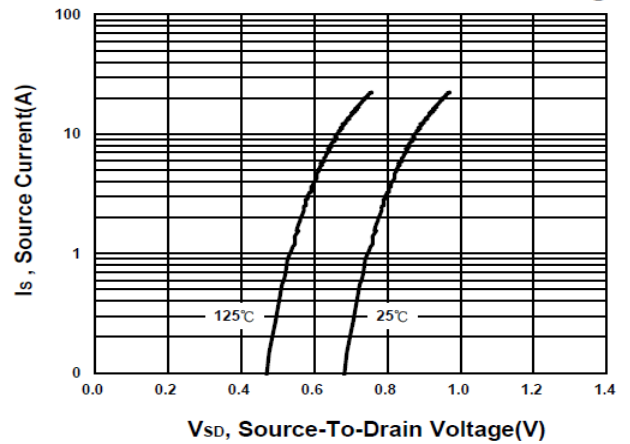
**Capacitance Characteristic**



**Gate charge Characteristics**



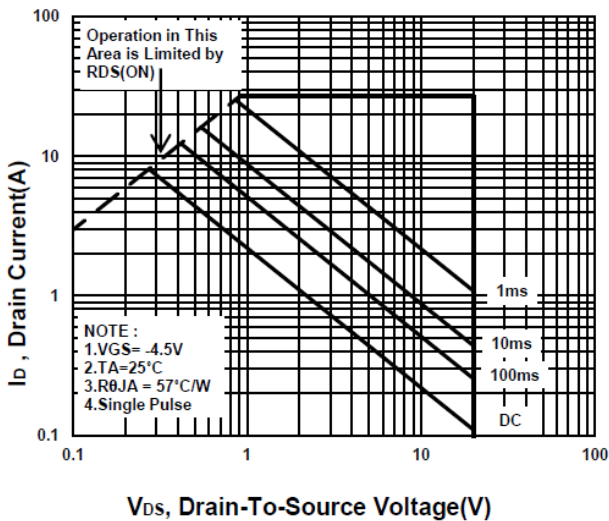
**Source-Drain Diode Forward Voltage**



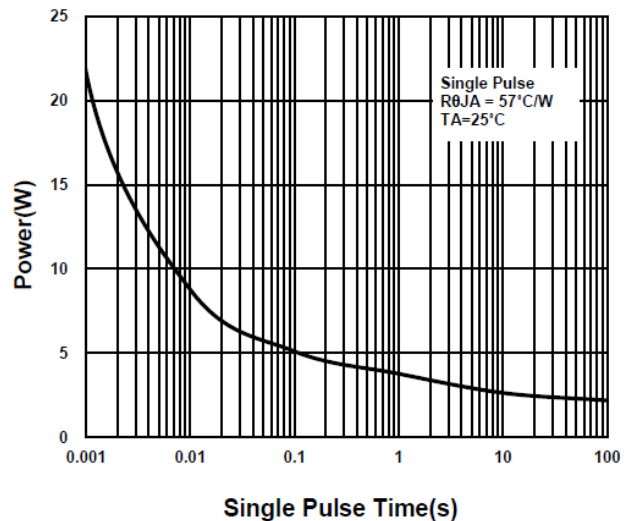
# PB521BX

## P-Channel Enhancement Mode MOSFET

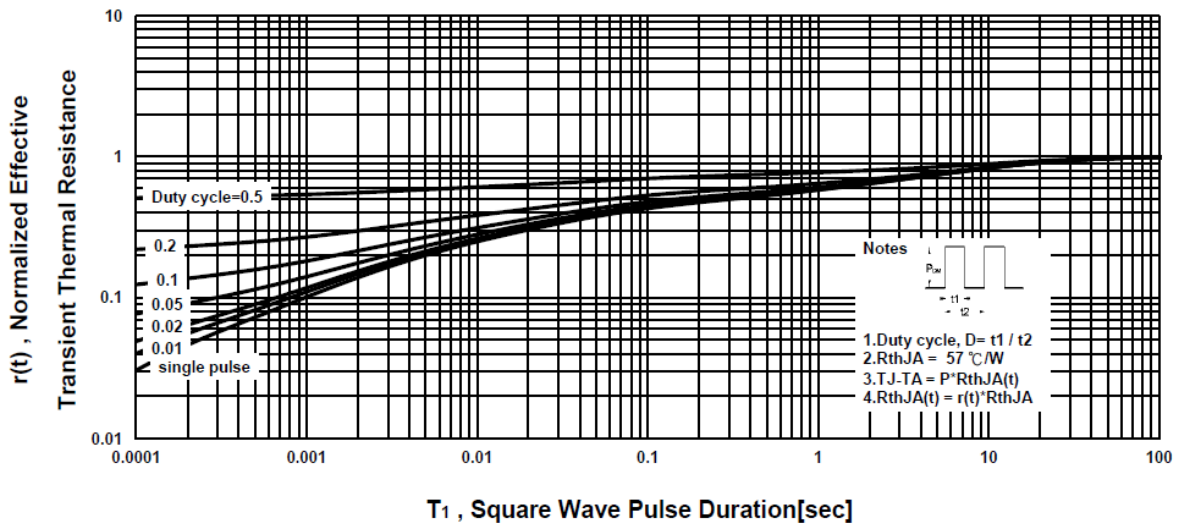
**Safe Operating Area**



**Single Pulse Maximum Power Dissipation**



**Transient Thermal Response Curve**



# PB521BX

## P-Channel Enhancement Mode MOSFET

### Package Dimension

### PDFN 2x2S MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	1.9		2.1	I	0		0.05
B	1.9		2.1	J		0.203	
C	0.55	0.65	0.75	K	0.55		0.8
D	0.85		1.25	L	0.2		0.4
E	0.174	0.25	0.326	M	0.46		0.85
F	0.25		0.35	N		0.15	
G		0.2		O		0.23	
H	0.8		1.15				

