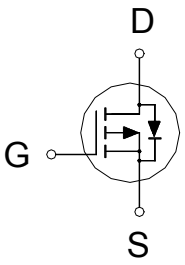
NIKO-SEM

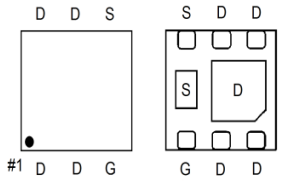
P-Channel Enhancement Mode Field Effect Transistor

PB521BX
PDFN 2x2S
Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-20V	21mΩ	-8A





RoHS Compliant

G : GATE
D : DRAIN
S : SOURCE

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±10	V
Continuous Drain Current	T_A = 25 °C	I_D	-8	A
	T_A = 70 °C		-6.4	
Pulsed Drain Current[1]		I_{DM}	29	
Power Dissipation	T_A = 25 °C	P_D	2.1	W
	T_A = 70 °C		1.4	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient[2]	$R_{\theta JA}$		57	°C／W

[1]Pulse width limited by maximum junction temperature.
[2]The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Coppe.

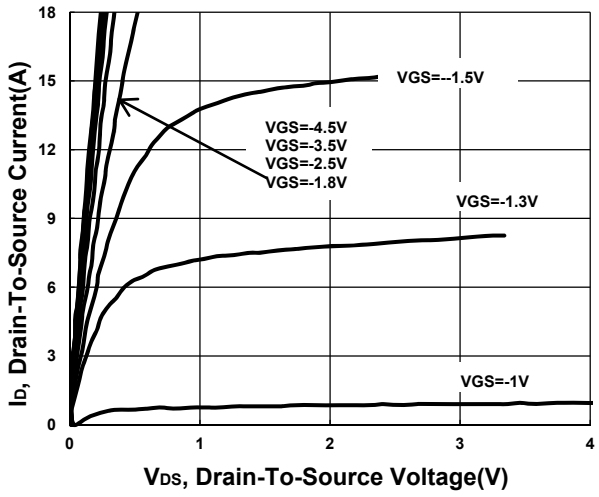
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.45	-0.6	-0.85	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±10V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -16V, V_{GS} = 0V			-1	μA
		V_{DS} = -10V, V_{GS} = 0V, T_J = 55 °C			-10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -1.8V, I_D = -1A		24	40	mΩ
		V_{GS} = -2.5V, I_D = -2A		19	28	
		V_{GS} = -4.5V, I_D = -2.5A		15	21	
Forward Transconductance[1]	g_{fs}	V_{DS} = -10V, I_D = -2.5A		21		S

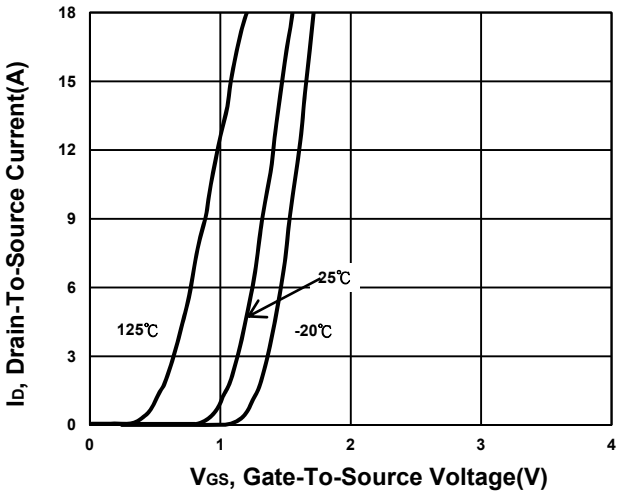
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -10V, f = 1MHz		1727		pF
Output Capacitance	C_{oss}			179		
Reverse Transfer Capacitance	C_{rss}			155		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		10		Ω
Total Gate Charge[2]	Q_g	V_{DS} = -10V , V_{DS} = -4.5V , I_D = -2.5A		21		nC
Gate-Source Charge[2]	Q_{gs}			1.8		
Gate-Drain Charge[2]	Q_{gd}			4.9		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = -10V $I_D \cong$ -2.5A, V_{GEN} = -4.5V, R_G = 6Ω		28		nS
Rise Time[2]	t_r			21		
Turn-Off Delay Time[2]	$t_{d(off)}$			81		
Fall Time[2]	t_f			48		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				-1.7	A
Forward Voltage[1]	V_{SD}	I_F = -2.5A, V_{GS} = 0V			-1.2	V
Reverse Recovery Time	t_{rr}	I_F = -2.5A , dI_F/dt = 100A / μS		35		nS
Reverse Recovery Charge	Q_{rr}			18		nC

[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.

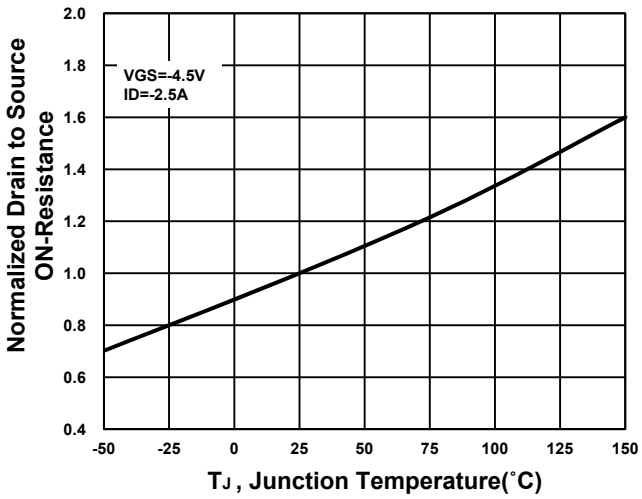
Output Characteristics



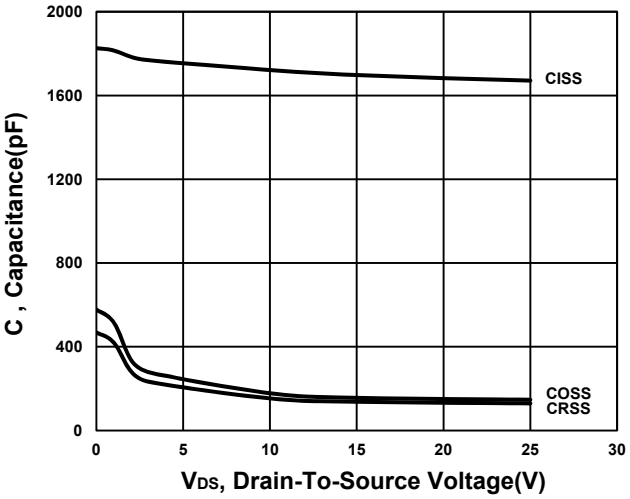
Transfer Characteristics



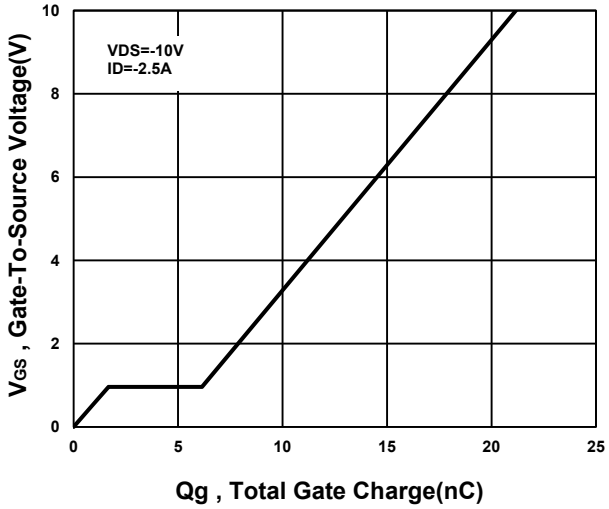
On-Resistance VS Temperature



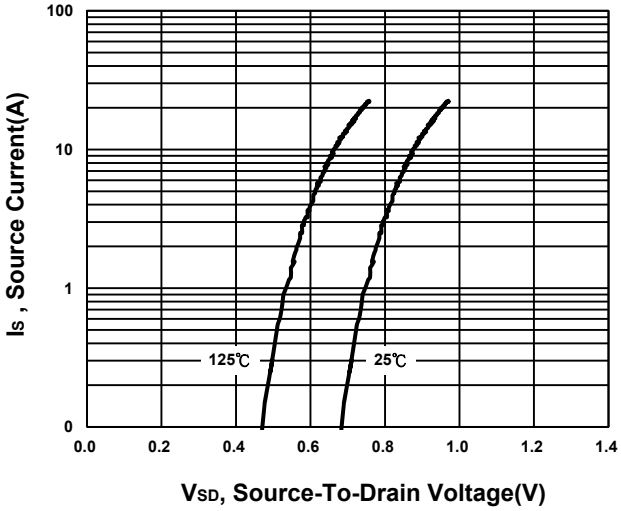
Capacitance Characteristic



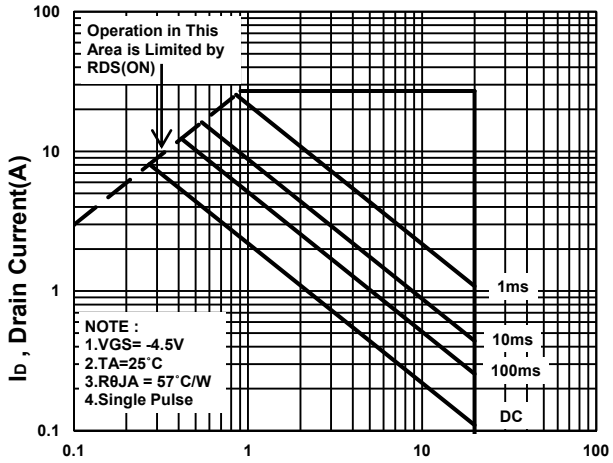
Gate charge Characteristics



Source-Drain Diode Forward Voltage

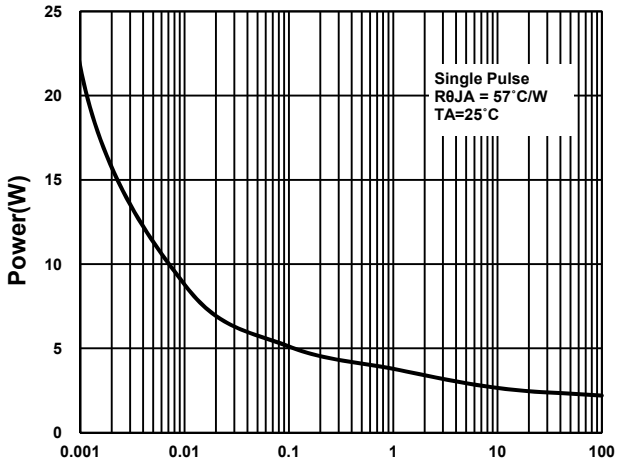


Safe Operating Area



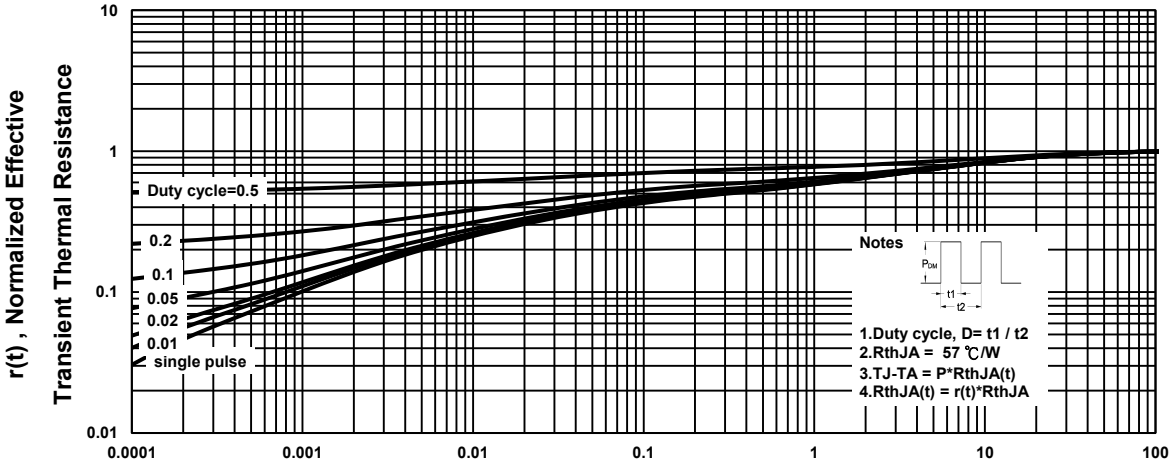
VDS, Drain-To-Source Voltage(V)

Single Pulse Maximum Power Dissipation



Single Pulse Time(s)

Transient Thermal Response Curve



T1 , Square Wave Pulse Duration[sec]