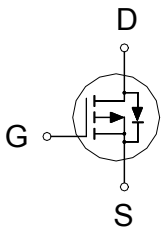
NIKO-SEM

P-Channel Enhancement Mode Field Effect Transistor

PM557BA
SOT-23(S)
Halogen-Free & Lead-Free

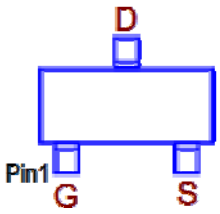
PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-30V	48mΩ	-3.3A



Features
- Pb−Free, Halogen Free and RoHS compliant.
- Low $R_{DS(on)}$ to Minimize Conduction Losses.
- Ohmic Region Good $R_{DS(on)}$ Ratio.
- Optimized Gate Charge to Minimize Switching Losses.

Applications
- Protection Circuits Applications.
- Logic/Load Switch Circuits Applications.



G: GATE
D: DRAIN
S: SOURCE

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current	T_A = 25 °C	I_D	-3.3	A
	T_A = 70 °C		-2.6	
Pulsed Drain Current[1]		I_{DM}	-16	
Power Dissipation	T_A = 25 °C	P_D	0.9	W
	T_A = 70 °C		0.6	
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]	$R_{\theta JA}$		130	°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. Copper.

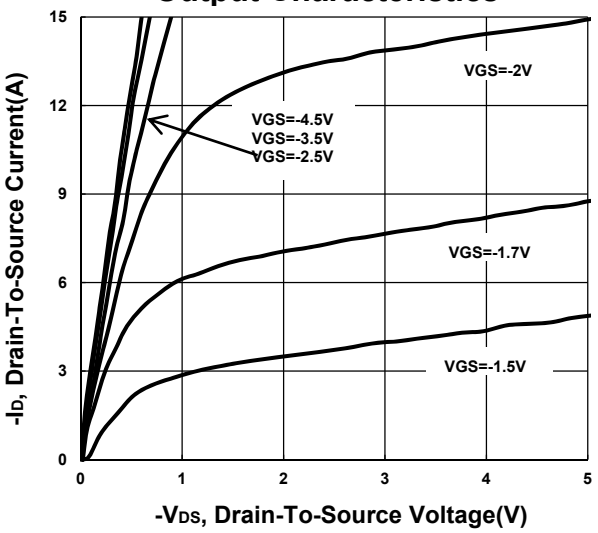
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.7	-0.9	-1.3	

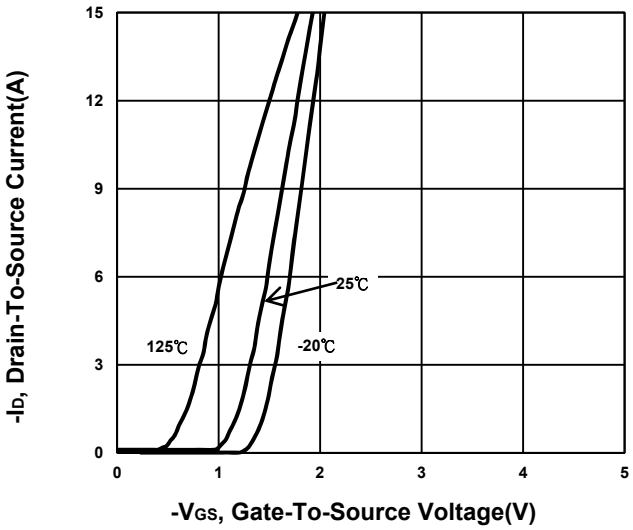
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±12V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -24V, V_{GS} = 0V			-1	μA
		V_{DS} = -20V, V_{GS} = 0V, T_J = 55 °C			-10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -2.5V, I_D = -1A		50	75	mΩ
		V_{GS} = -4.5V, I_D = -3.3A		40	50	
		V_{GS} = -10V, I_D = -3.3A		36	48	
Forward Transconductance[1]	g_{fs}	V_{DS} = -5V, I_D = -3.3A		15		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -15V, f = 1MHz		807		pF
Output Capacitance	C_{oss}			81		
Reverse Transfer Capacitance	C_{rss}			61		
Total Gate Charge[2]	Q_g	V_{DS} = -15V , V_{GS} =-4.5V, I_D = -3.3A		8.6		nC
Gate-Source Charge[2]	Q_{gs}			1.1		
Gate-Drain Charge[2]	Q_{gd}			2.6		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = -15V, V_{GS} = -4.5V $I_D \cong$ -3.3A, R_G = 6Ω		19		nS
Rise Time[2]	t_r			30		
Turn-Off Delay Time[2]	$t_{d(off)}$			55		
Fall Time[2]	t_f			20		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				-0.8	A
Forward Voltage[1]	V_{SD}	I_F = -3.3A, V_{GS} = 0V			-1.1	V
Reverse Recovery Time	t_{rr}	I_F = -3.3A, dI_F/dt = 100A / μS		8.5		nS
Reverse Recovery Charge	Qrr			2.5		nC

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

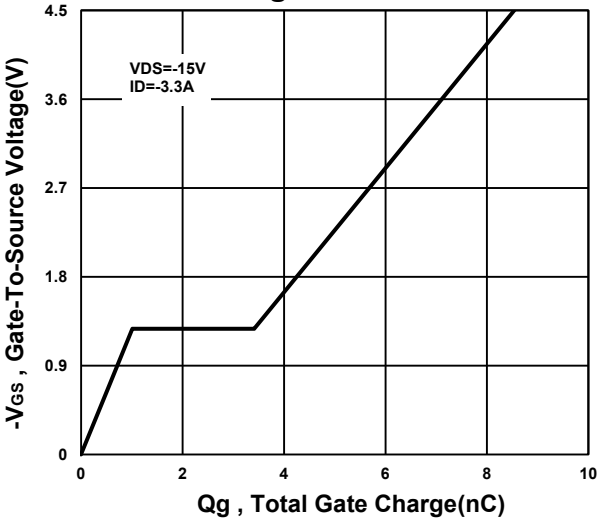
Output Characteristics



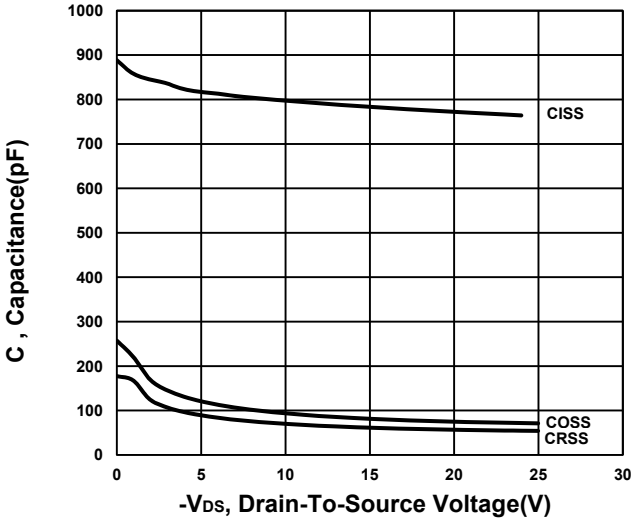
Transfer Characteristics



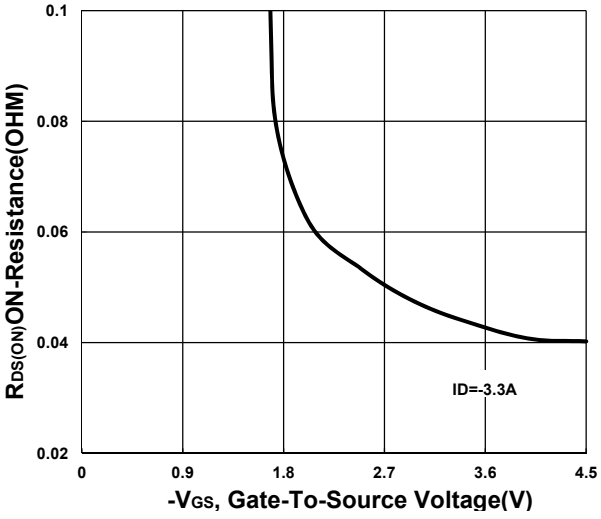
Gate charge Characteristics



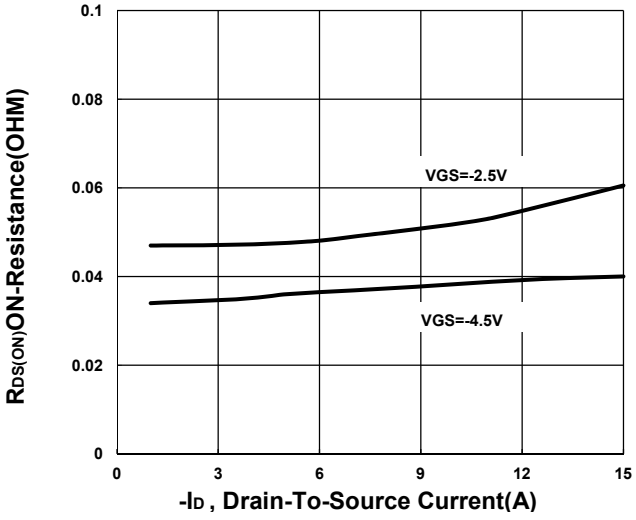
Capacitance Characteristic



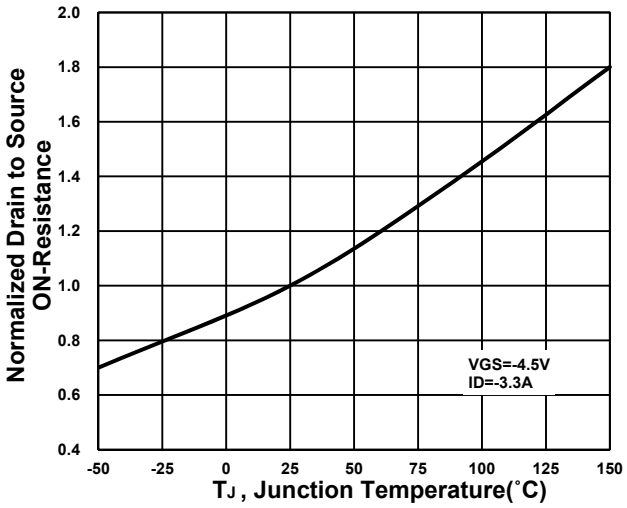
On-Resistance VS Gate-To-Source



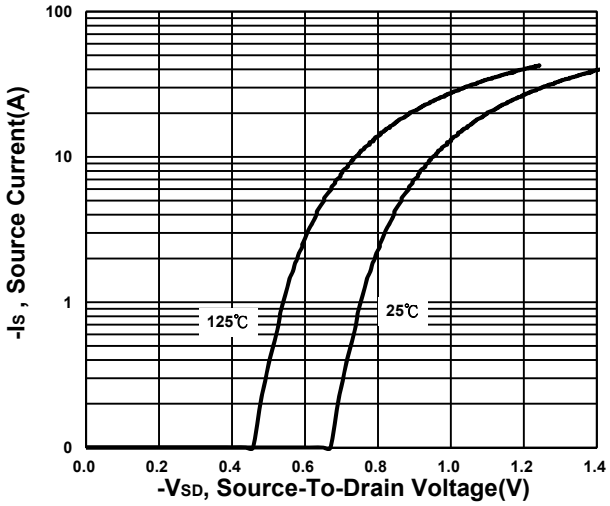
On-Resistance VS Drain Current



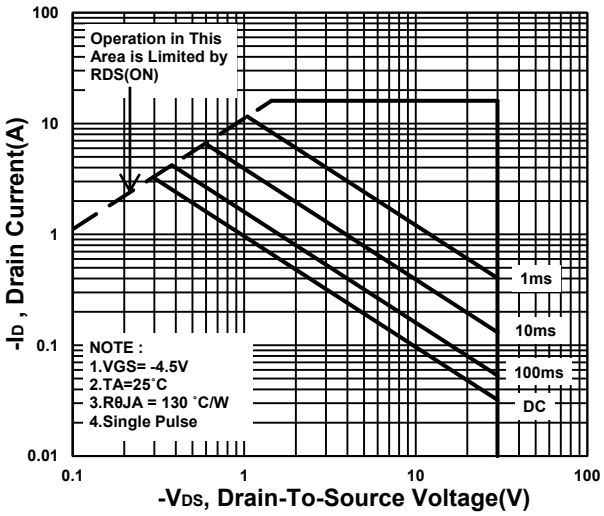
On-Resistance VS Temperature



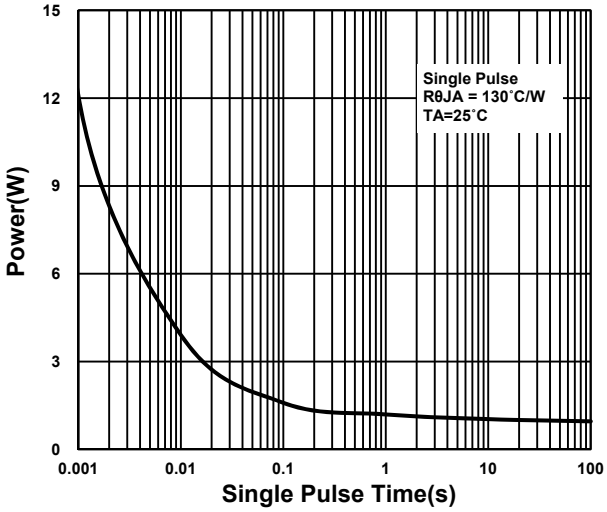
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve