NIKO-SEM

P-Channel Logic Level Enhancement Mode Field Effect Transistor

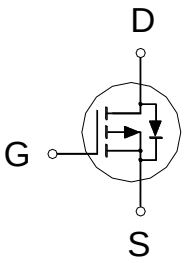
PV507BA

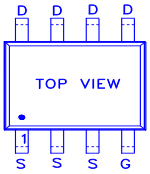
SOP-8

Halogen-free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-30V	14mΩ	-13A





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}	-30	V
Gate-Source Voltage		V_{GS}	±25	V
Continuous Drain Current	T_A = 25 °C	I_D	-13	A
	T_A = 70 °C		-10	
Pulsed Drain Current[1]		I_{DM}	-50	
Avalanche Current		I_{AS}	-41	
Avalanche Energy	L = 0.1mH	E_{AS}	84	mJ
Power Dissipation[3]	T_A = 25 °C	P_D	4.1	W
	T_A = 70 °C		2.6	
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]	t ≦10s	$R_{\theta JA}$		30	°C / W
Junction-to-Ambient[2]	Steady-State	$R_{\theta JA}$		60	
Junction-to-Case	Steady-State	$R_{\theta JC}$		17	

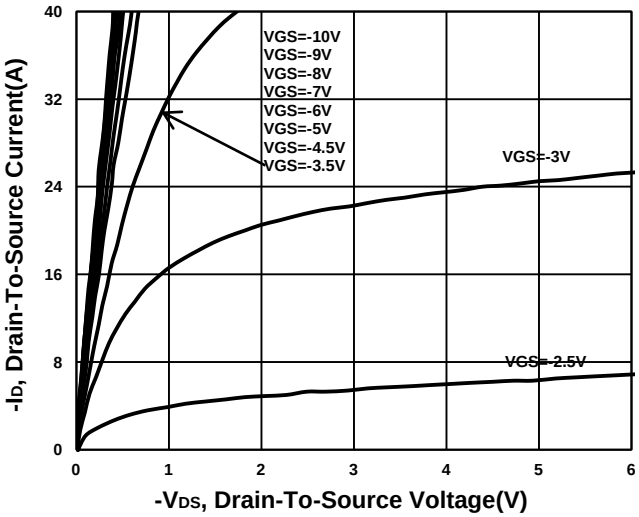
[1]Pulse width limited by maximum junction temperature.
[2] The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.
[3]The Power dissipation is based on $R_{\theta JA}$ t ≦10s value.

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

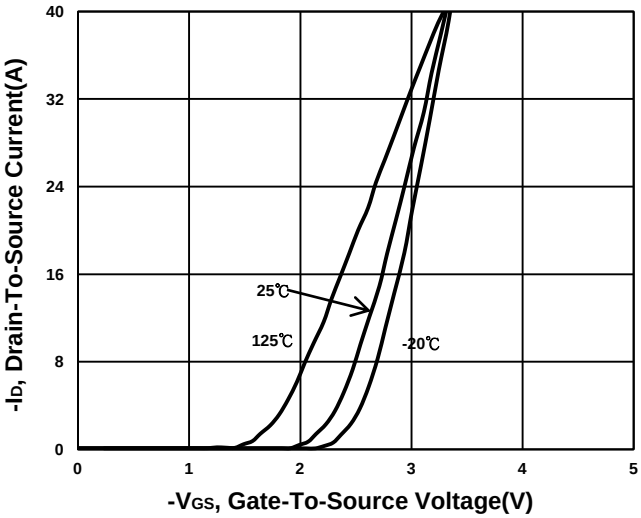
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1	-1.5	-3	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	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	μA
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = -5V, V_{GS} = -10V	-50			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -4.5V, I_D = -9A		17	22	mΩ
		V_{GS} = -10V, I_D = -10A		11	14	mΩ
Forward Transconductance[1]	g_{fs}	V_{DS} = -10V, I_D = -10A		32		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -15V, f = 1MHz		2120		pF
Output Capacitance	C_{oss}			337		pF
Reverse Transfer Capacitance	C_{rss}			333		pF
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		2.4		Ω
Total Gate Charge[2]	Q_g	V_{DS} = -15V , V_{GS} = -10V, I_D = -10A		51		nC
Gate-Source Charge[2]	Q_{gs}			7		nC
Gate-Drain Charge[2]	Q_{gd}			14		nC
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = -15V, $I_D \cong$ -10A, V_{GS} = -10V, R_{GEN} = 6Ω		10		nS
Rise Time[2]	t_r			16		nS
Turn-Off Delay Time[2]	$t_{d(off)}$			200		nS
Fall Time[2]	t_f			100		nS
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				-10	A
Forward Voltage[1]	V_{SD}	I_F = -10 A, V_{GS} = 0V			-1.2	V
Reverse Recovery Time	t_{rr}	I_F=-10A, dI/dt=100A/μs		20		nS
Reverse Recovery Charge	Q_{rr}			8		uC

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

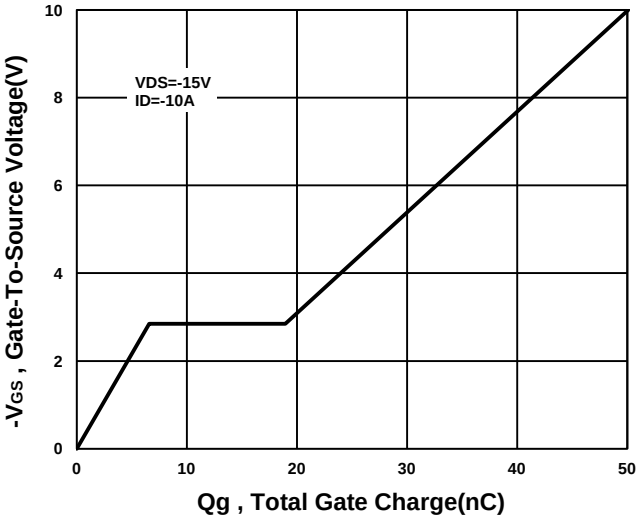
Output Characteristics



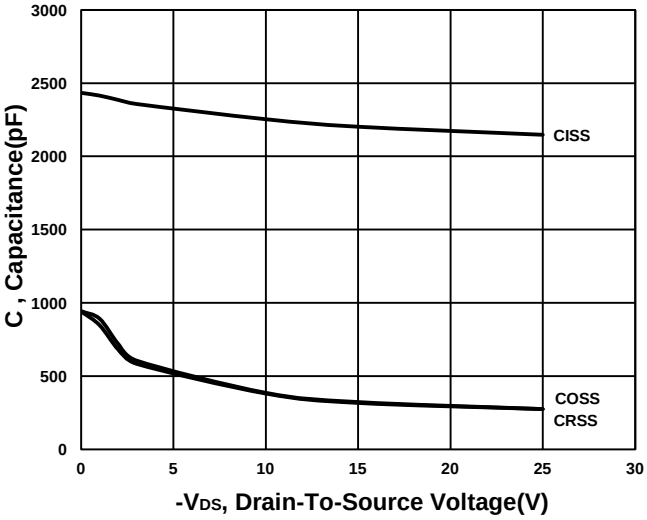
Transfer Characteristics



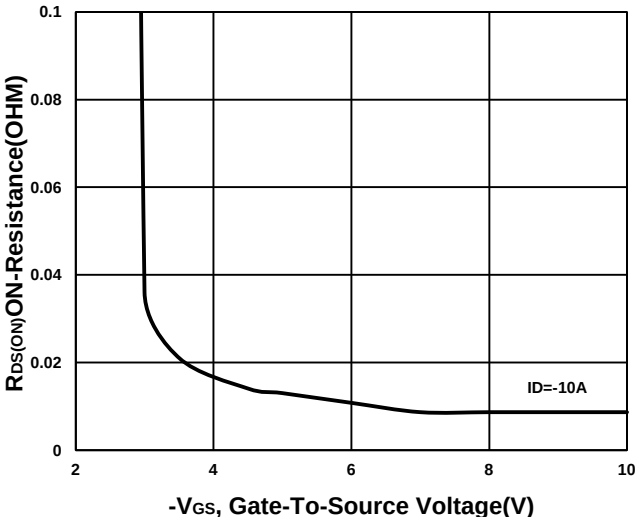
Gate charge Characteristics



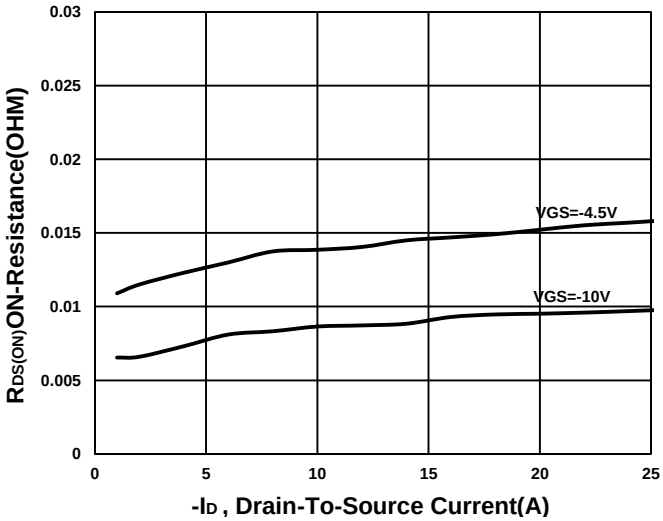
Capacitance Characteristic



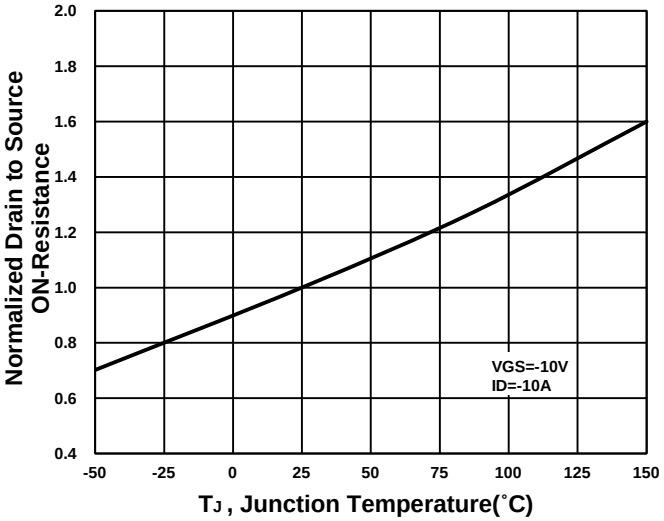
On-Resistance VS Gate-To-Source



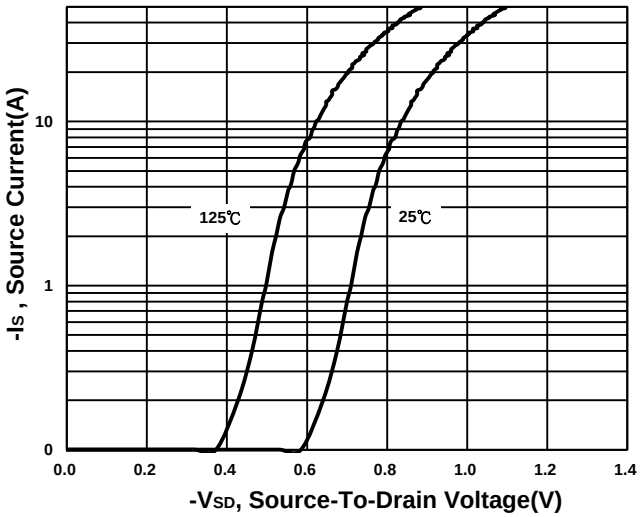
On-Resistance VS Drain Current



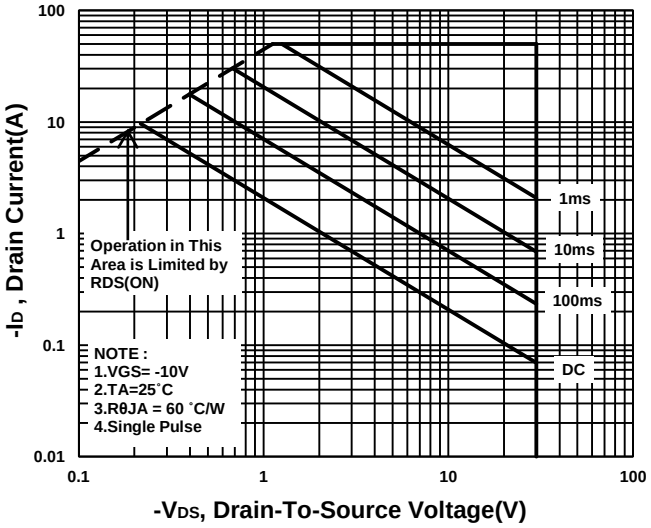
On-Resistance VS Temperature



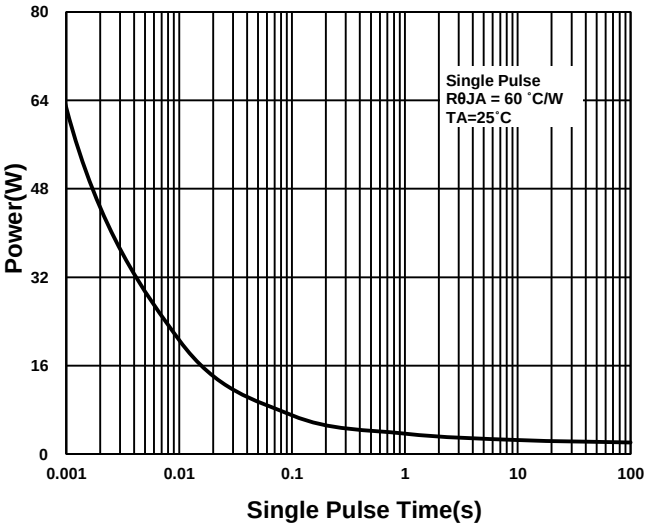
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve