NIKO-SEM

N-Channel Enhancement Mode Field Effect Transistor

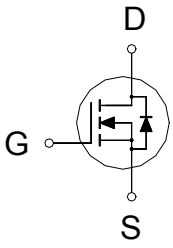
PV600BA

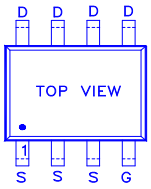
SOP-8

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
30V	10.8mΩ	10A





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}	±20	V
Continuous Drain Current	T_A = 25 ° C	I_D	10	A
	T_A = 70 ° C		8	
Pulsed Drain Current[1]		I_{DM}	40	
Avalanche Current		I_{AS}	17.6	
Avalanche Energy	L = 0.1mH	E_{AS}	15.5	mJ
Power Dissipation	T_A = 25 ° C	P_D	1.95	W
	T_A = 70 ° C		1.25	
Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	° C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$		64	° C / W
Junction-to-Case	$R_{\theta JC}$		25	

[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.

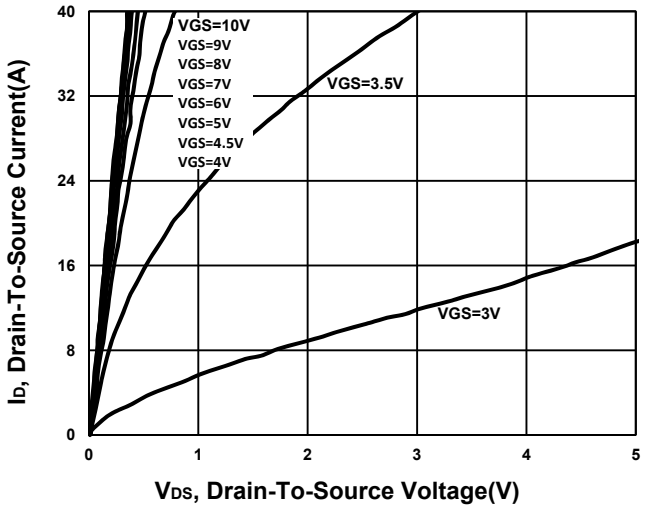
.ELECTRICAL CHARACTERISTICS (T_J = 25 ° C, Unless Otherwise Noted)

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	1.3	1.7	2.3	
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	
Drain-Source On-State Resistance1	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 10A		10.6	15	mΩ
		V_{GS} =10V, I_D = 10A		8.3	10.8	

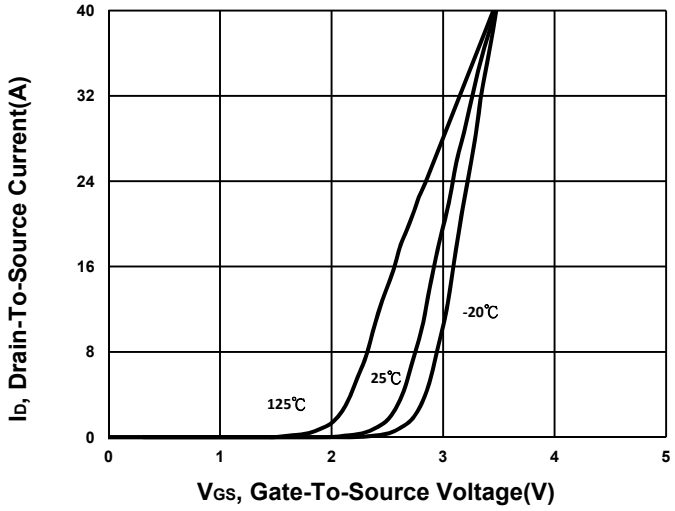
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 10A		40		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz		616		pF
Output Capacitance	C_{oss}			108		
Reverse Transfer Capacitance	C_{rss}			76		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		2.8		Ω
Total Gate Charge[2]	$Q_{g(VGS=10V)}$	V_{DS} = 15V , I_D =10A		13.8		nC
	$Q_{g(VGS=4.5V)}$			7.2		
Gate-Source Charge[2]	Q_{gs}			1.7		
Gate-Drain Charge[2]	Q_{gd}			3.9		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 15V , $I_D \cong$ 10A, V_{GS} = 10V, R_{GEN} =16Ω		15		nS
Rise Time[2]	t_r			41		
Turn-Off Delay Time[2]	$t_{d(off)}$			50		
Fall Time[2]	t_f			27		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 ° C)						
Continuous Current	I_S				1.8	A
Forward Voltage[1]	V_{SD}	I_F = 10A, V_{GS} = 0V			1.1	V
Diode Reverse Recovery Time	t_{rr}	I_F= 10A, dI/dt=100A/μs		12		nS
Diode Reverse Recovery Charge	Q_{rr}			3		nC

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

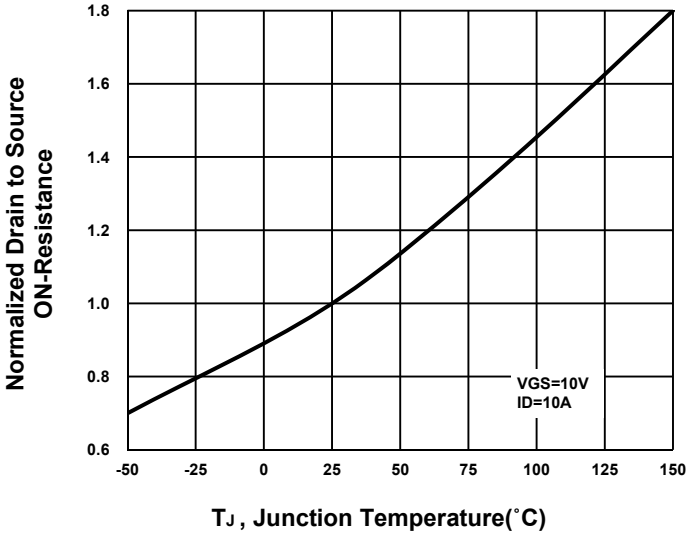
Output Characteristics



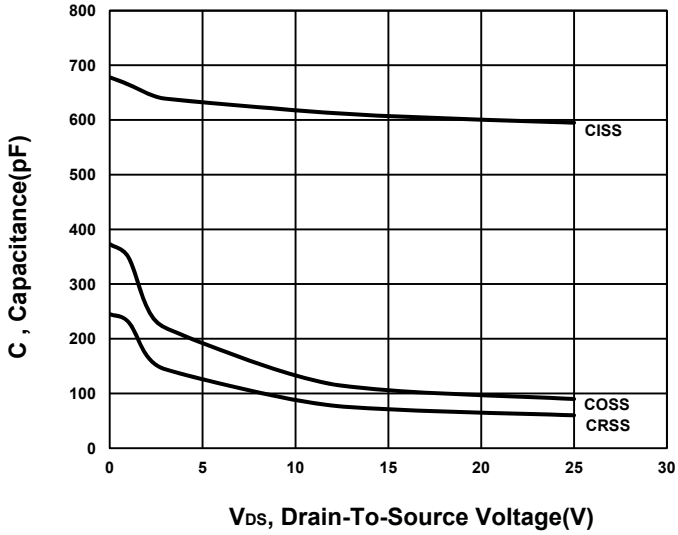
Transfer Characteristics



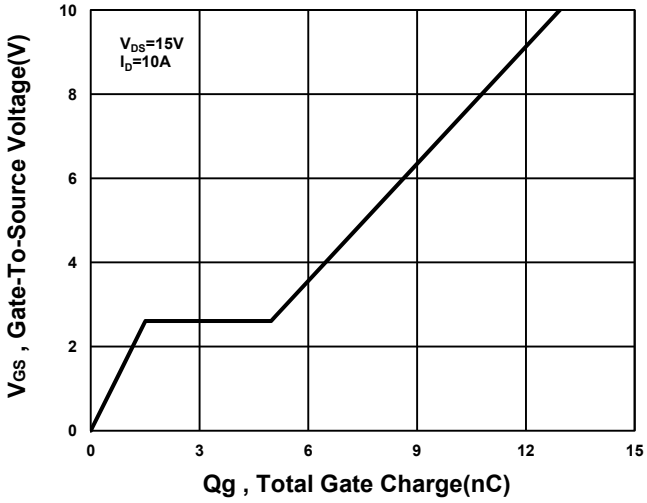
On-Resistance VS Temperature



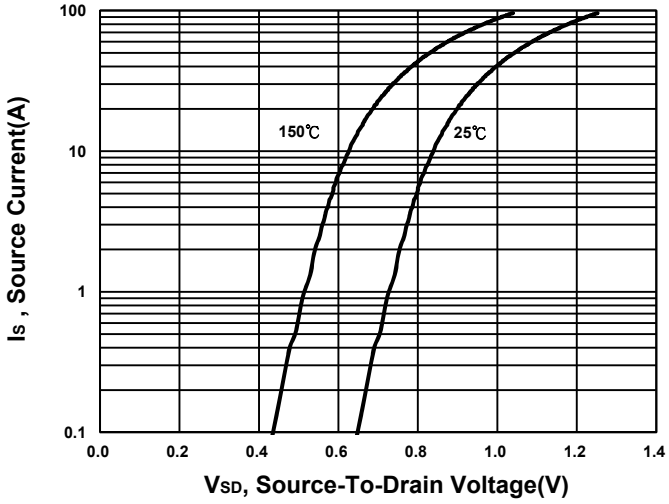
Capacitance Characteristic



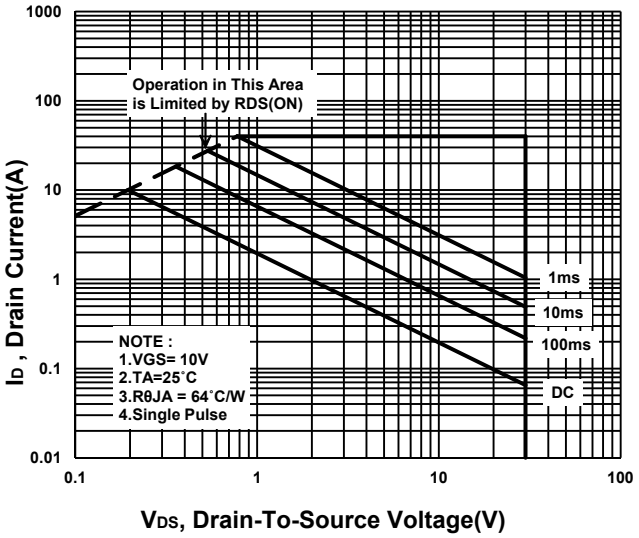
Gate charge Characteristics



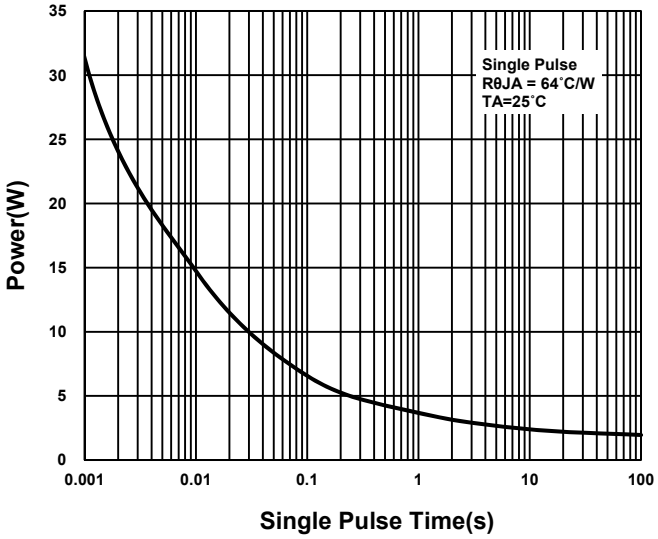
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve