NIKO-SEM

Dual N-Channel Enhancement Mode Field Effect Transistor

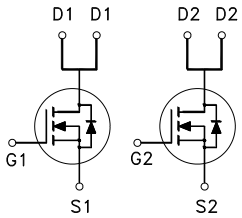
PV616DA

SOP-8

Halogen-Free & Lead-Free

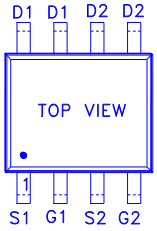
PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
30V	8.5mΩ	12A



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.



G : GATE
D : DRAIN
S : SOURCE

Applications

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

100% UIS Tested
100% Rg Tested

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	12	A
	T_A = 70 ° C		9.7	
Pulsed Drain Current[1]		I_{DM}	48	
Avalanche Current		I_{AS}	24	
Avalanche Energy	L = 0.1mH	E_{AS}	28.8	mJ
Power Dissipation[3]	T_A = 25 ° C	P_D	2.4	W
	T_A = 70 ° C		1.5	
Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	° C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE		SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	t ≦10s	$R_{\theta JA}$		52	° C / W
Junction-to-Ambient	Steady-State	$R_{\theta JA}$		70	
Junction-to-Case		$R_{\theta JC}$		25	

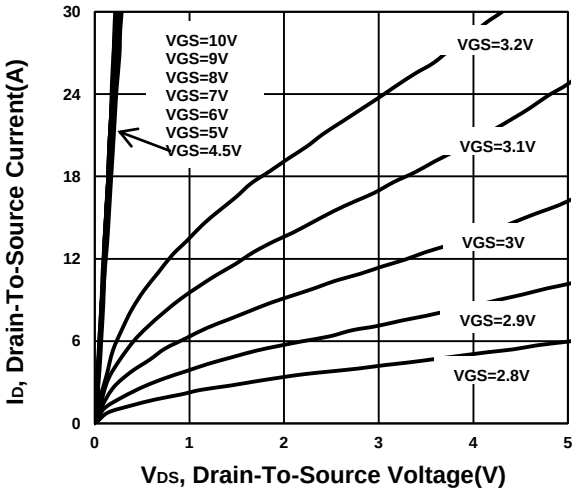
[1]Pulse width limited by maximum junction temperature.
[2]The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25° C.
[3]The Power dissipation is based on $R_{\theta JA}$ t ≦10s value

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

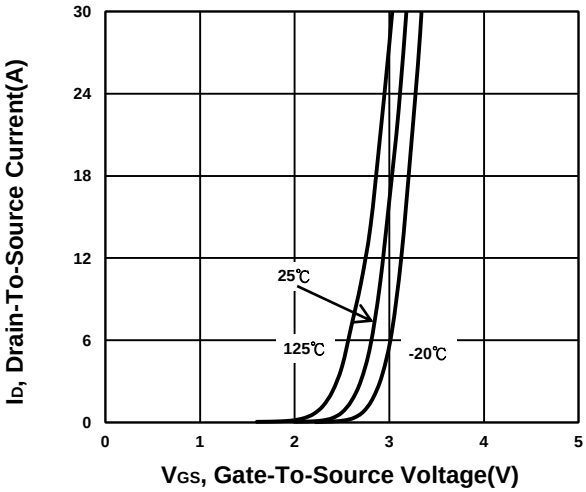
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.4	1.75	2.2	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30V, V_{GS} = 0V			1	μA
		V_{DS} = 30V, V_{GS} = 0V, T_J = 55 ° C			10	μA
Drain-Source On-State Resistance[4]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 12A		8.5	13	mΩ
		V_{GS} =10V, I_D = 12A		6.6	8.5	mΩ
Forward Transconductance[4]	g_{fs}	V_{DS} = 5V, I_D = 12A		62		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz		841		pF
Output Capacitance	C_{oss}			166		pF
Reverse Transfer Capacitance	C_{rss}			103		pF
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		2.4		Ω
Total Gate Charge[5]	$Q_{g(VGS=10V)}$	V_{DS} = 15V , I_D = 12A		17		nC
	$Q_{g(VGS=4.5V)}$			9.2		nC
Gate-Source Charge[5]	Q_{gs}			2.1		nC
Gate-Drain Charge[5]	Q_{gd}			4.6		nC
Turn-On Delay Time[5]	$t_{d(on)}$	V_{DS} = 15V , I_D ≅ 12A, V_{GS} = 10V, R_{GEN} =6Ω		8.6		nS
Rise Time[5]	t_r			62		nS
Turn-Off Delay Time[5]	$t_{d(off)}$			25		nS
Fall Time[5]	t_f			84		nS
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 ° C)						
Continuous Current	I_S				2	A
Forward Voltage[4]	V_{SD}	I_F = 12A, V_{GS} = 0V			1.2	V
Diode Reverse Recovery Time	t_{rr}	I_F= 12A, dI/dt=100A/μs		8.2		nS
Diode Reverse Recovery Charge	Q_{rr}			1.8		nC

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

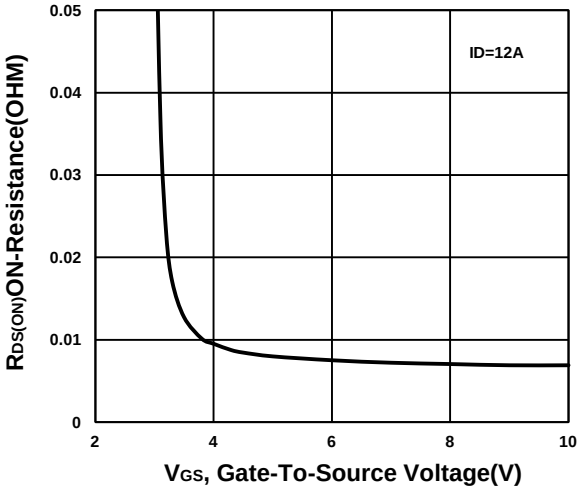
Output Characteristics



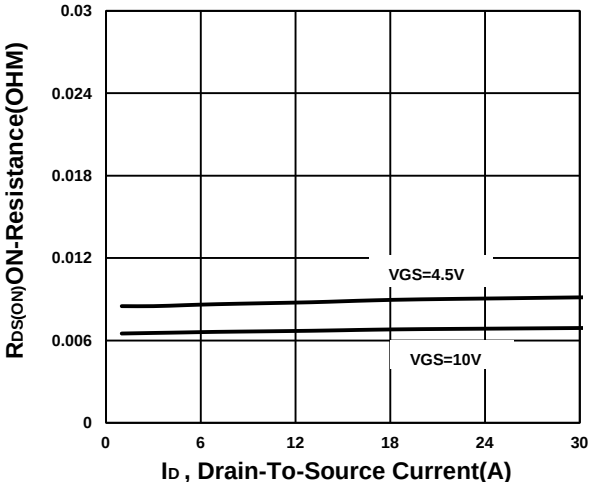
Transfer Characteristics



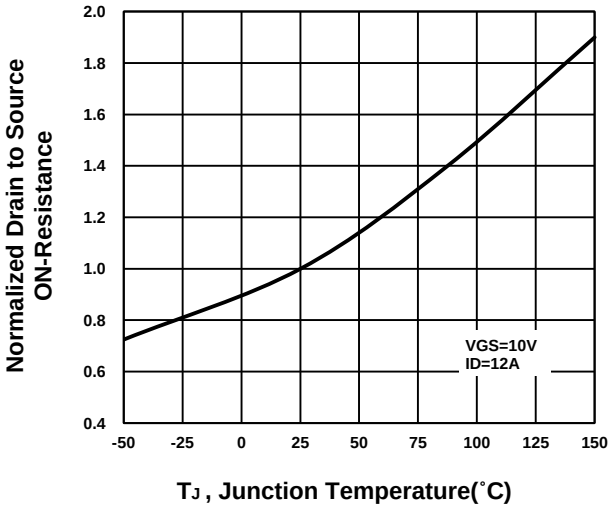
On-Resistance VS Gate-To-Source Voltage



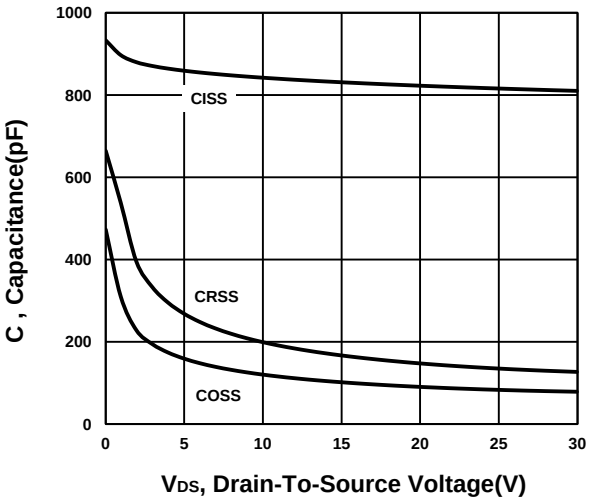
On-Resistance VS Drain Current



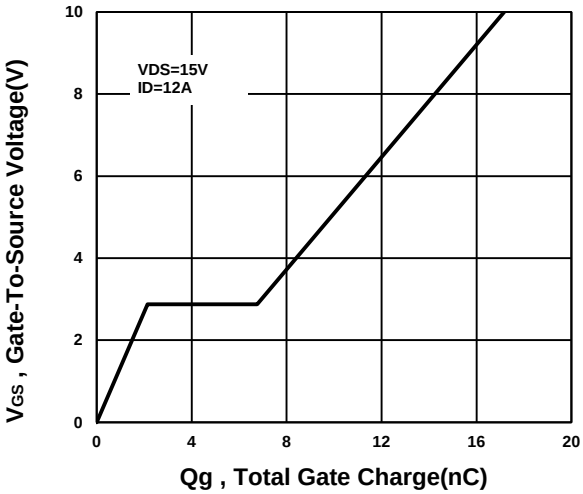
On-Resistance VS Temperature



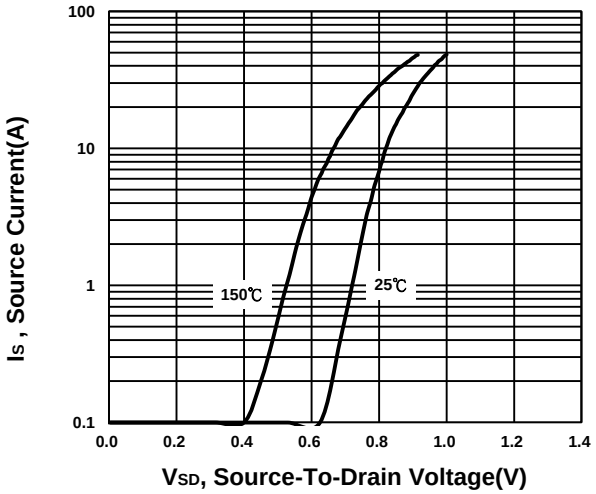
Capacitance Characteristic



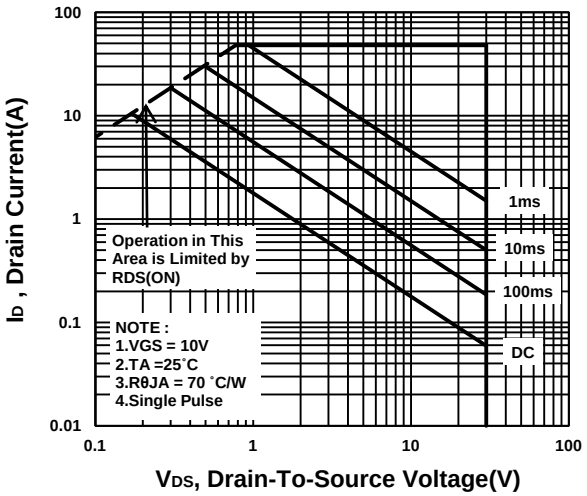
Gate charge Characteristics



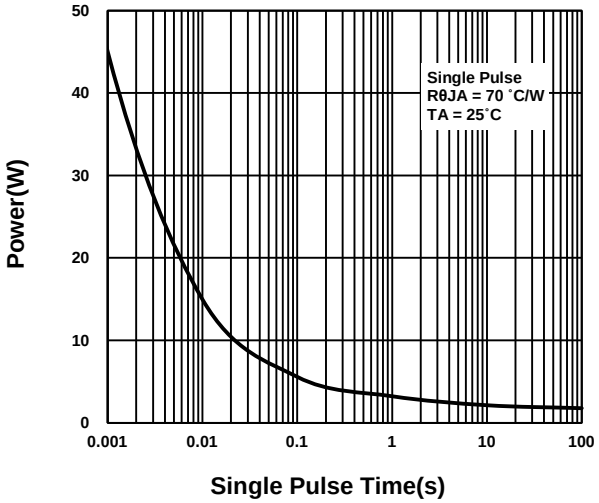
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve