NIKO-SEM

N-Channel Enhancement Mode Field Effect Transistor

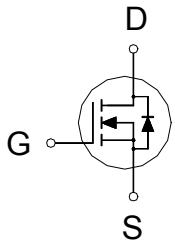
P0502CV

SOP-8

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
20V	5mΩ	18A



G: GATE
D: DRAIN
S: SOURCE

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C Unless Otherwis e 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	18	A
	T_A = 100 °C		11	
Pulsed Drain Current[1]		I_{DM}	70	
Power Dissipation	T_A = 25 °C	P_D	2.5	W
	T_A = 100 °C		1	
Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$		50	°C / W

[1]Pulse width limited by maximum junction temperature.

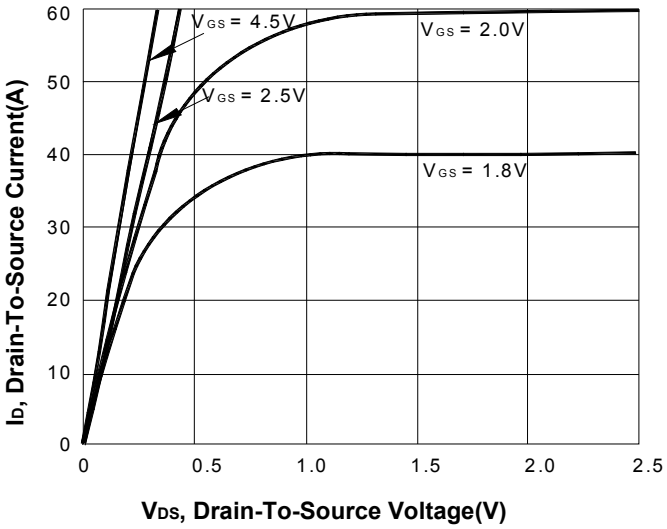
ELECTRICAL CHARACTERISTICS (T_A = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.3	0.55	0.8	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±8V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20V, 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 = 5A		4.1	5	mΩ
		V_{GS} = 2.5V, I_D = 5A		4.75	5.7	
		V_{GS} = 1.8V, I_D = 5A		6.7	8.2	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 18A		100		S

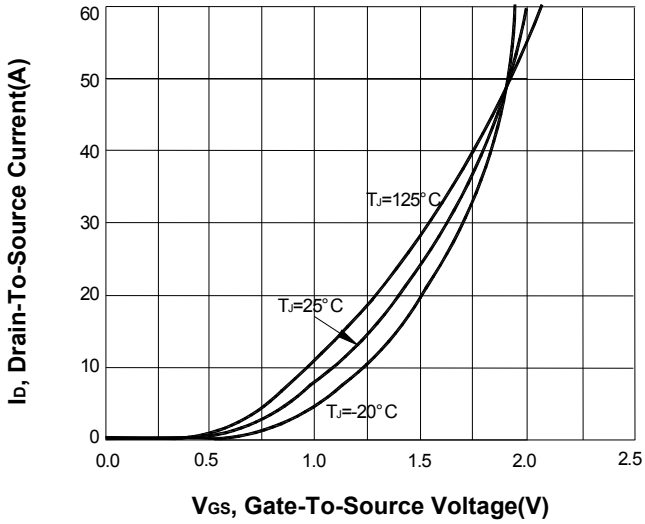
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 20V, f = 1MHz		3470		pF
Output Capacitance	C_{oss}			526		
Reverse Transfer Capacitance	C_{rss}			412		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		1.3		Ω
Total Gate Charge[2]	Q_g	V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = 2.5V, I_D = 18A		30		nC
Gate-Source Charge[2]	Q_{gs}			15		
Gate-Drain Charge[2]	Q_{gd}			5		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 10V , R_L = 15Ω I_D ≅ 1A, V_{GS} = 4.5V, R_{GEN} =6Ω		20		nS
Rise Time[2]	t_r			25		
Turn-Off Delay Time[2]	$t_{d(off)}$			180		
Fall Time[2]	t_f			85		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_A = 25 °C)						
Continuous Current	I_S				18	A
Forward Voltage[1]	V_{SD}	I_F = 5A, V_{GS} = 0V			1.3	V

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

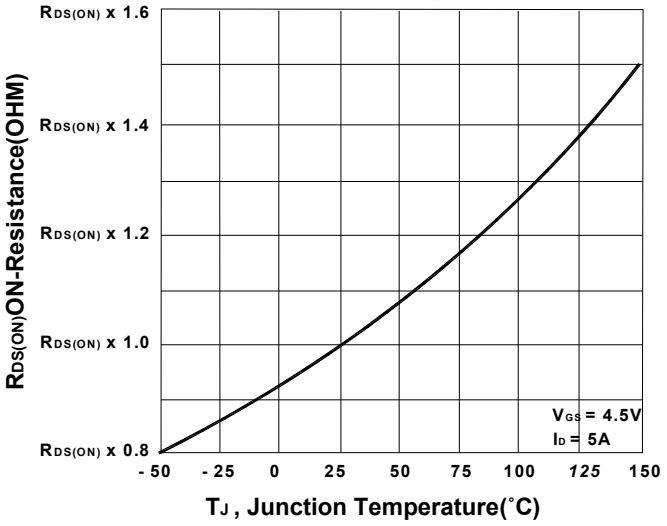
Output Characteristics



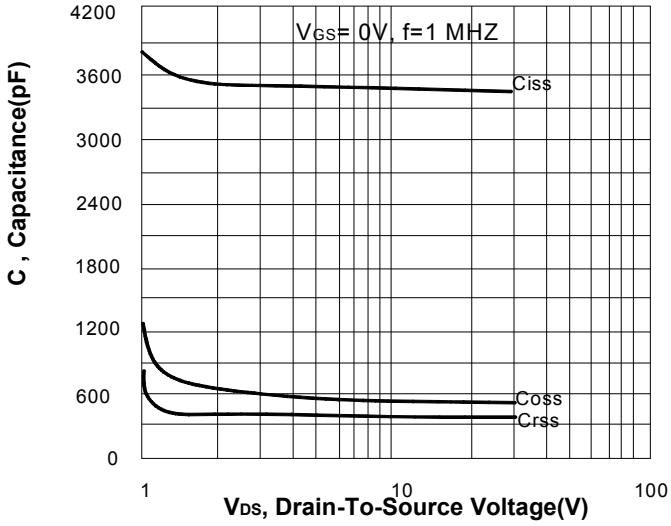
Transfer Characteristics



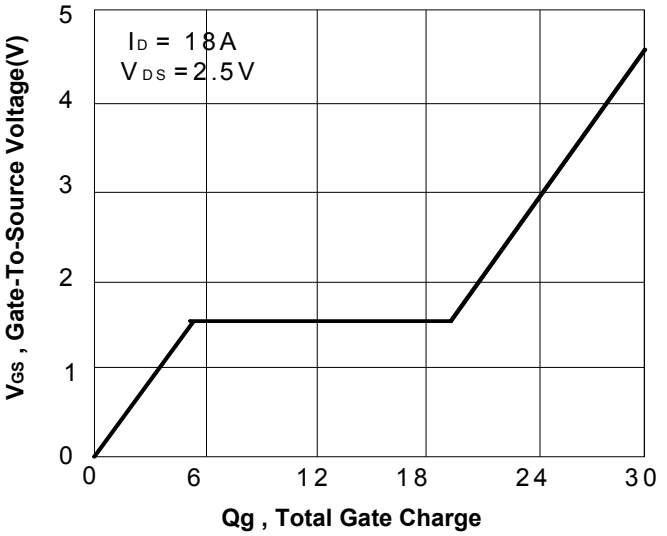
On-Resistance VS Temperature



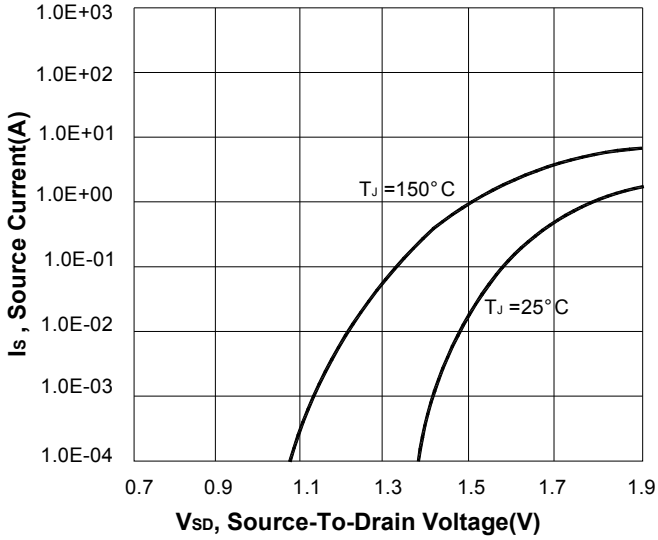
Capacitance Characteristic



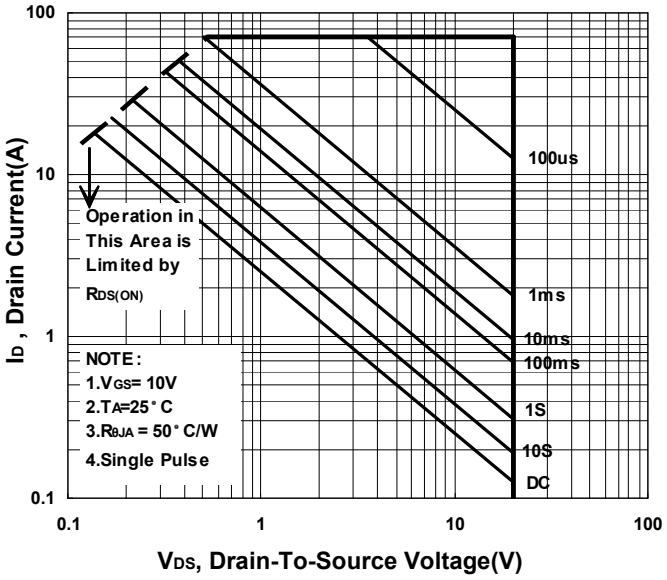
Gate charge Characteristics



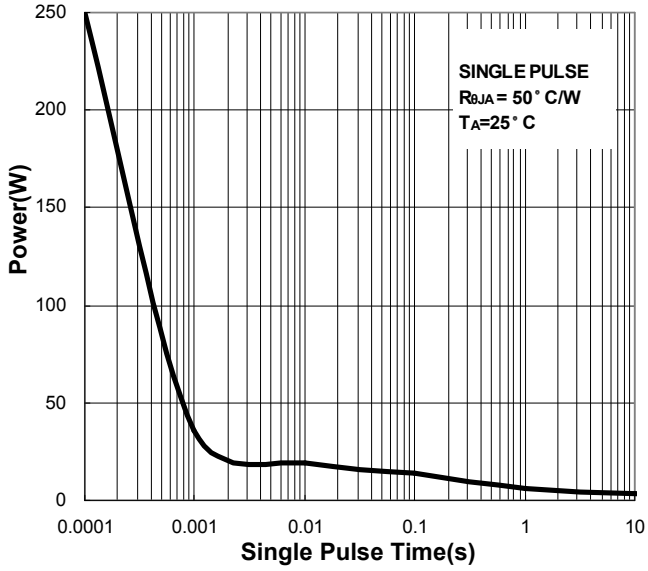
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve