NIKO-SEM

N-Channel Enhancement Mode Field Effect Transistor

PG1010BD

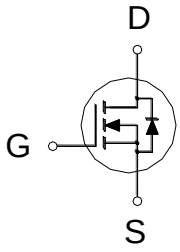
TO-252

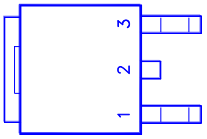
Halogen-Free & Lead-Free

RoHS Compliant

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
100V	10.5mΩ	59A





1. GATE
2. DRAIN
3. SOURCE

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current[2]	T_C = 25 ° C	I_D	59	A
	T_C = 100 ° C		37	
Pulsed Drain Current[1]		I_{DM}	150	
Avalanche Current		I_{AS}	TBD	
Avalanche Energy	L = 1mH	E_{AS}	TBD	mJ
Power Dissipation	T_C = 25 ° C	P_D	83	W
	T_C = 100 ° C		33	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	° C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		1.5	° C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	

[1]Pulse width limited by maximum junction temperature.
[2]Package limitation current is 55A

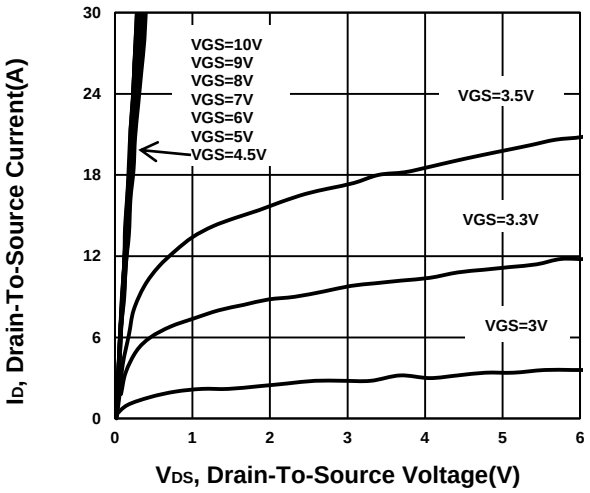
ELECTRICAL CHARACTERISTICS (T_J = 25 ° C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.4	2	3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100V, V_{GS} = 0V			1	μA
		V_{DS} = 100V, V_{GS} = 0V, T_J = 125 ° C			100	

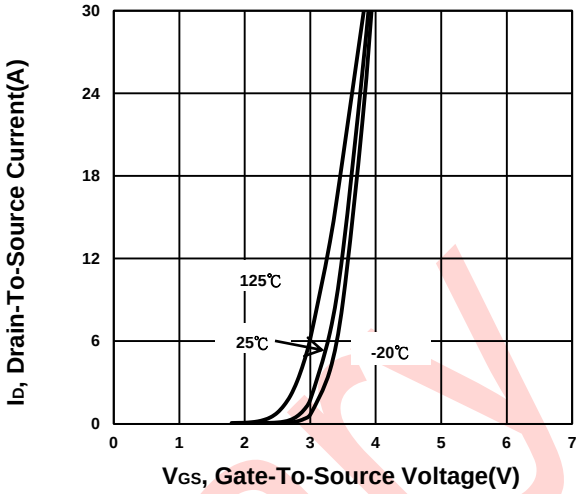
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 10A		11	15	mΩ
		V_{GS} = 10V, I_D = 12A		8	10.5	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 12A		60		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 50V, f = 1MHz		2167		pF
Output Capacitance	C_{oss}			194		
Reverse Transfer Capacitance	C_{rss}			13		
Gate Resistance	Rg	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		1.5		Ω
Total Gate Charge[2]	Q_g (V_{GS} = 10V)	V_{DS} =50V,I_D = 12A		40		nC
	Q_g (V_{GS} = 4.5V)			23		
Gate-Source Charge[2]	Q_{gs}			6.6		
Gate-Drain Charge[2]	Q_{gd}			12		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 50V, $I_D \cong$ 12A, V_{GS} = 10V, R_{GEN} =6Ω		13		nS
Rise Time[2]	t_r			34		
Turn-Off Delay Time[2]	$t_{d(off)}$			50		
Fall Time[2]	t_f			61		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				59	A
Forward Voltage[1]	V_{SD}	I_F = 12A , V_{GS} = 0V			1.2	V
Reverse Recovery Time	t_{rr}	I_F = 12A , dI_F/dt= 100A/μs		36		nS
Reverse Recovery Charge	Q_{rr}			50		nC

[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Package limitation current is 55A

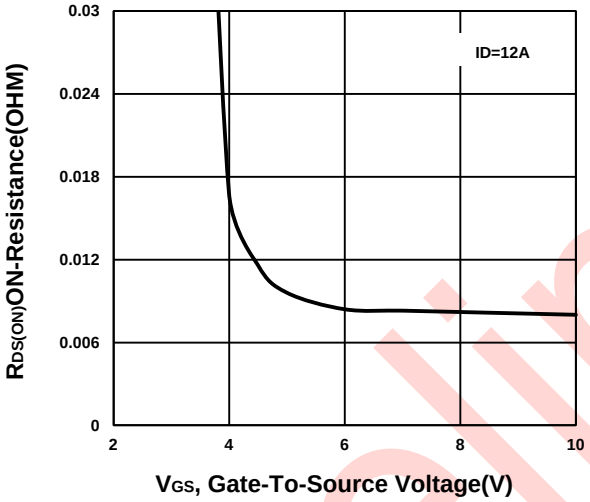
Output Characteristics



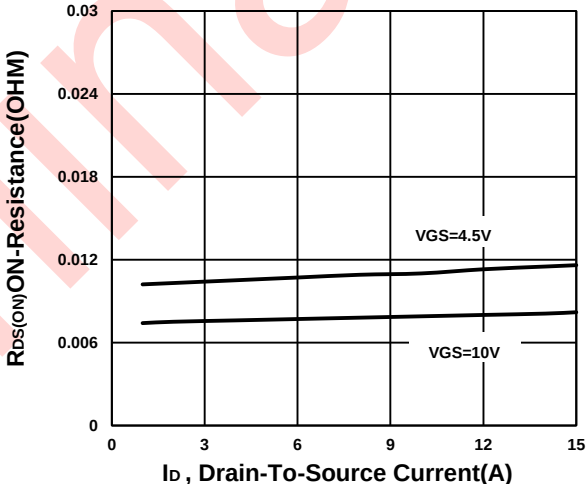
Transfer Characteristics



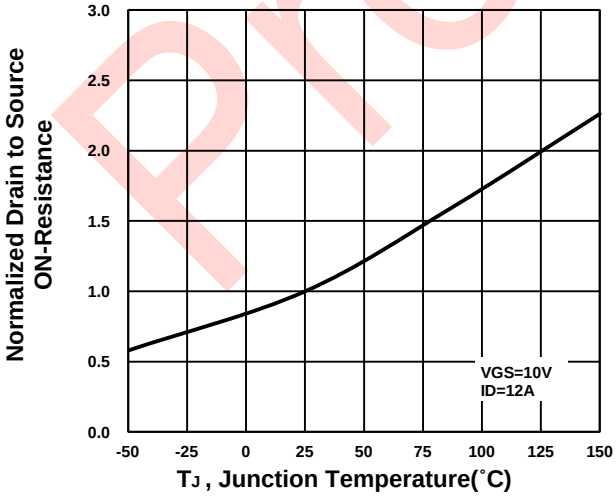
On-Resistance VS Gate-To-Source Voltage



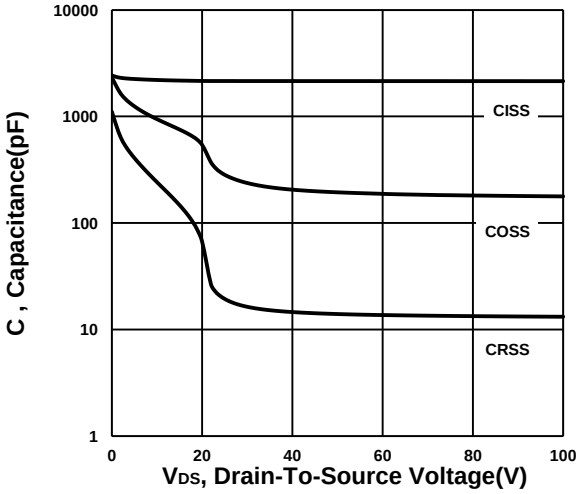
On-Resistance VS Drain Current



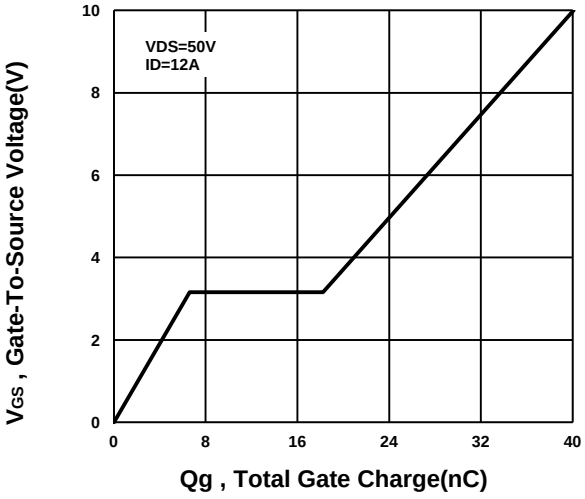
On-Resistance VS Temperature



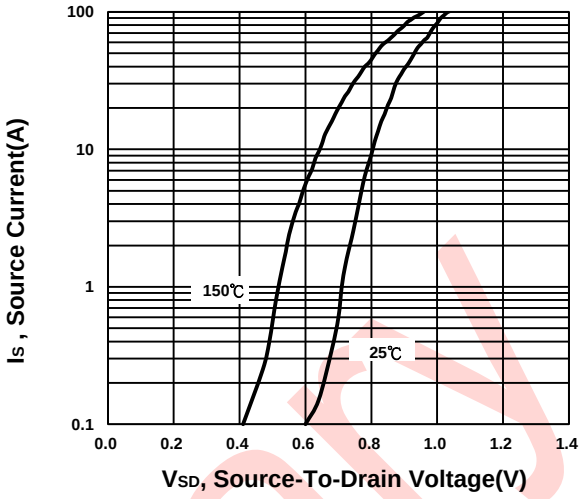
Capacitance Characteristic



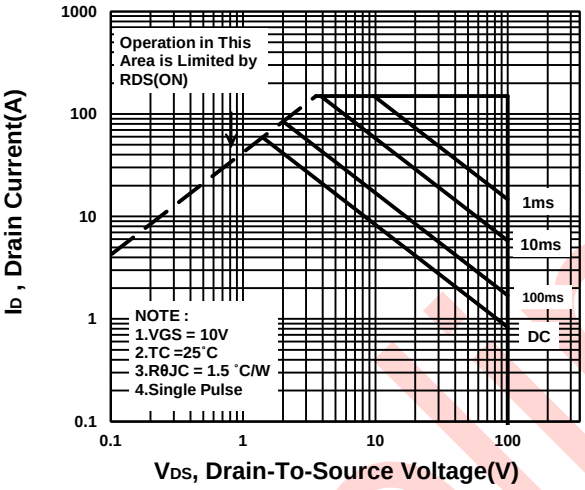
Gate charge Characteristics



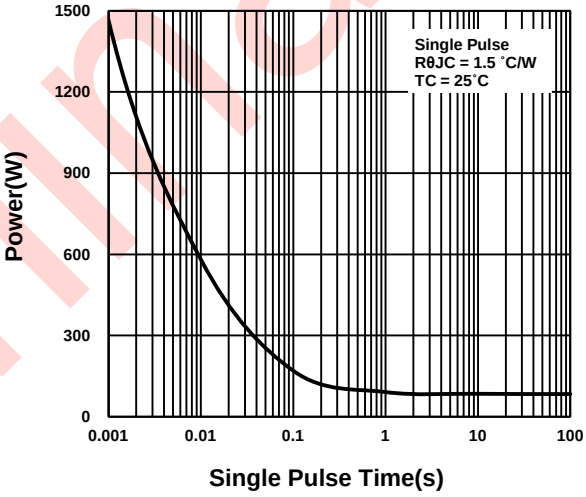
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve