NIKO-SEM

N-Channel Enhancement Mode Field Effect Transistor

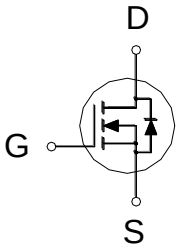
P0920BD

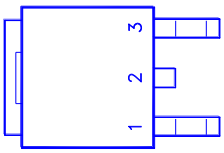
TO-252

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
200V	0.42Ω	9A





1. GATE
2. DRAIN
3. SOURCE

RoHS Compliant

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25 °C	I_D	9	A
	T_C = 100 °C		5	
Pulsed Drain Current1		I_{DM}	31	
Avalanche Current		I_{AS}	9	
Avalanche Energy	L = 2.8mH	E_{AS}	113	mJ
Power Dissipation	T_C = 25 °C	P_D	62.5	W
	T_C = 100 °C		25	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATING

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		2	°C / W

[1]Pulse width limited by maximum junction temperature.

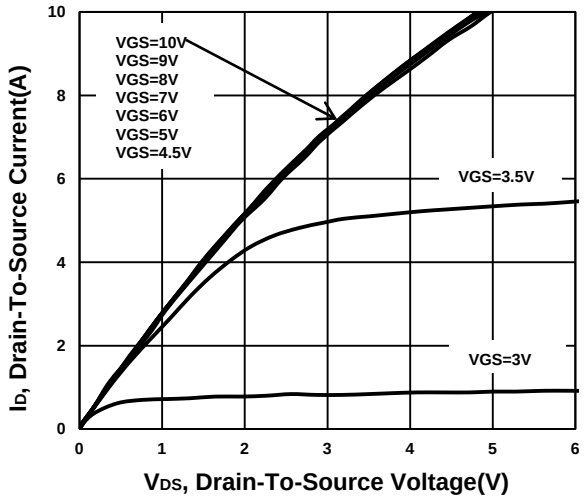
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	200			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	2	3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 200V, V_{GS} = 0V			1	μA
		V_{DS} = 160V, V_{GS} = 0V, T_J = 125 °C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 4.5A		0.35	0.48	Ω
		V_{GS} = 10V, I_D = 4.5A		0.33	0.42	

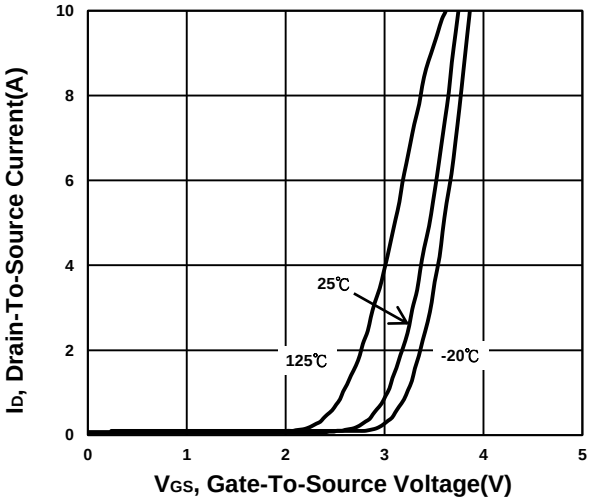
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 4.5A		10		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		759		nF
Output Capacitance	C_{oss}			77		
Reverse Transfer Capacitance	C_{rss}			21		
Total Gate Charge[2]	Q_g	V_{DS} =160V, V_{GS} = 10V, I_D = 9A		29.5		nC
Gate-Source Charge[2]	Q_{gs}			2.8		
Gate-Drain Charge[2]	Q_{gd}			11		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 100V, $I_D \cong$ 9A, V_{GS} = 10V, R_{GEN} = 6Ω		28		nS
Rise Time[2]	t_r			99		
Turn-Off Delay Time[2]	$t_{d(off)}$			85		
Fall Time[2]	t_f			97		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[2]	I_S				9	A
Forward Voltage[1]	V_{SD}	I_F = 9A, V_{GS} = 0V			1.6	V
Reverse Recovery Time	t_{rr}	I_F = 9A, dI_F/dt = 100A / μS		159		nS
Reverse Recovery Charge	Q_{rr}			822		nC

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

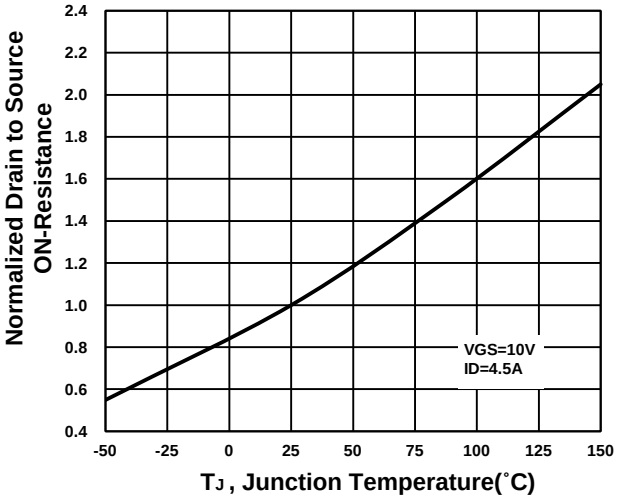
Output Characteristics



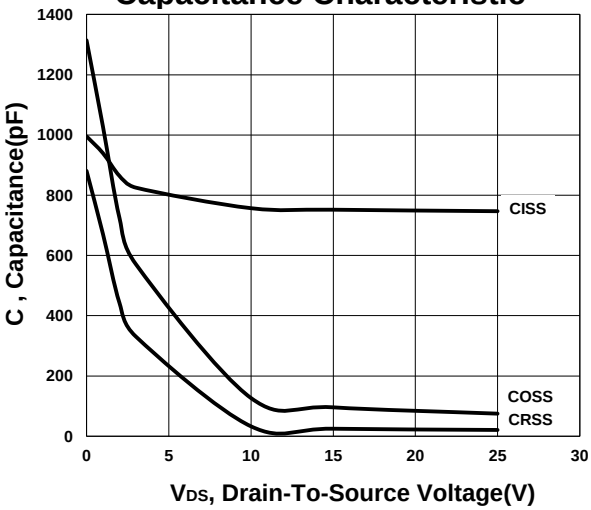
Transfer Characteristics



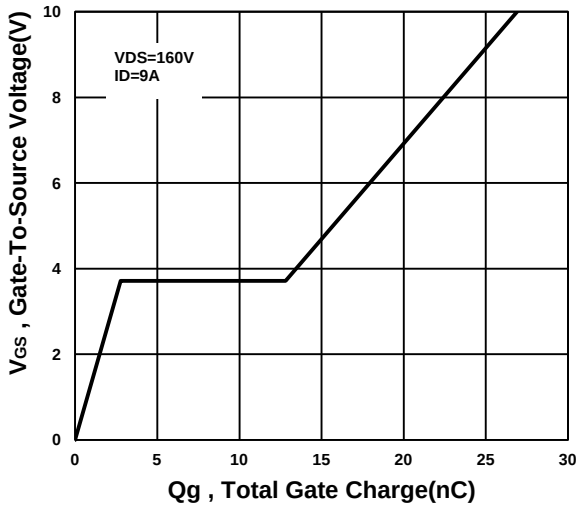
On-Resistance VS Temperature



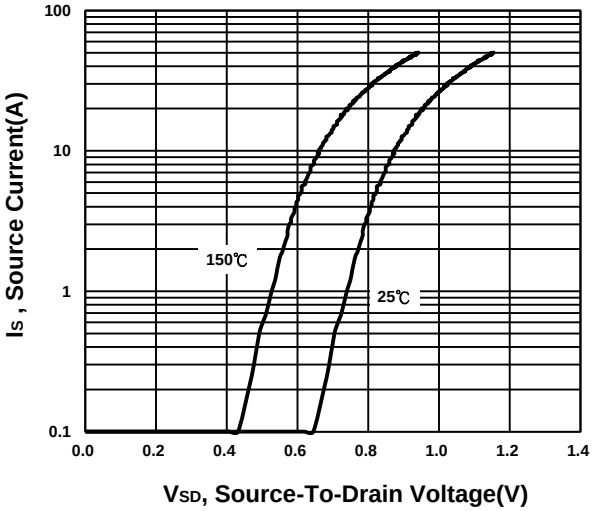
Capacitance Characteristic



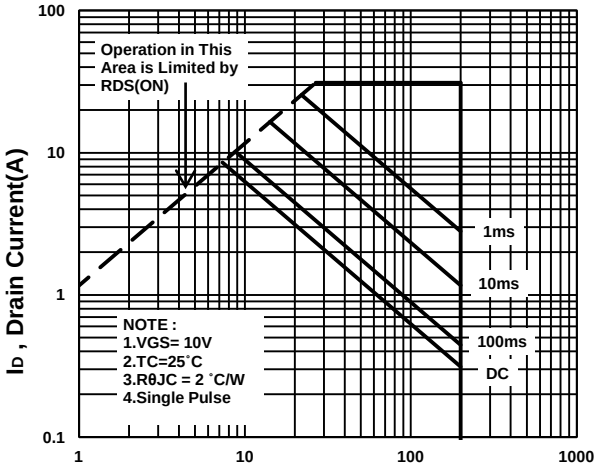
Gate charge Characteristics



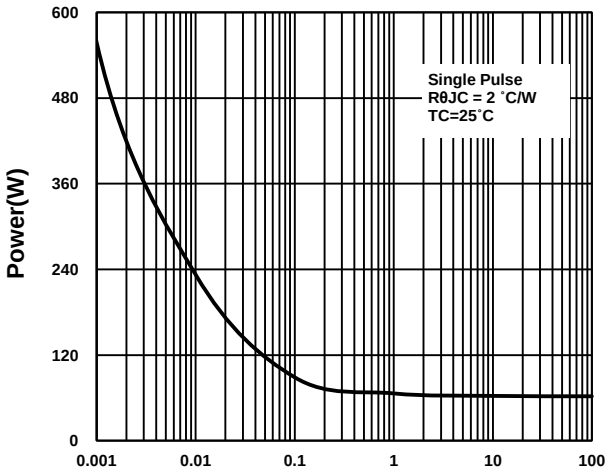
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve