NIKO-SEM

N-Channel Enhancement Mode Field Effect Transistor

PD600BA

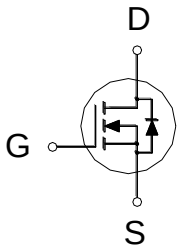
TO-252

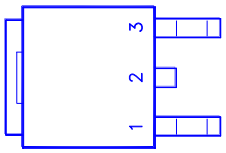
Halogen-Free & Lead-Free

RoHS Compliant

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
30V	9.5mΩ	42A





1. GATE
2. DRAIN
3. SOURCE

100% RG Test , 100% UIL Test

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[2]	T_C = 25 °C	I_D	42	A
	T_C = 100 °C		26	
Pulsed Drain Current[1]		I_{DM}	120	
Avalanche Current		I_{AS}	20	
Avalanche Energy	L = 0.1mH	E_{AS}	20	mJ
Power Dissipation	T_C = 25 °C	P_D	32	W
	T_C = 100 °C		13	
Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		3.8	°C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	

[1]Pulse width limited by maximum junction temperature.
[2]Package limitation current is 28A

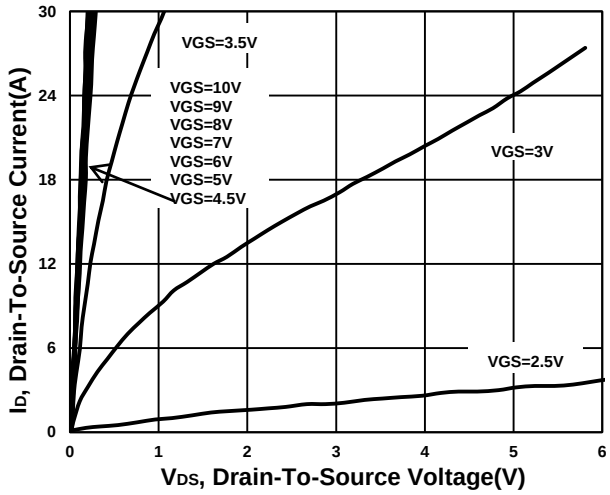
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.3	1.75	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 = 125 °C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 15A		9.6	13.5	mΩ
		V_{GS} = 10V , I_D = 20A		7.3	9.5	

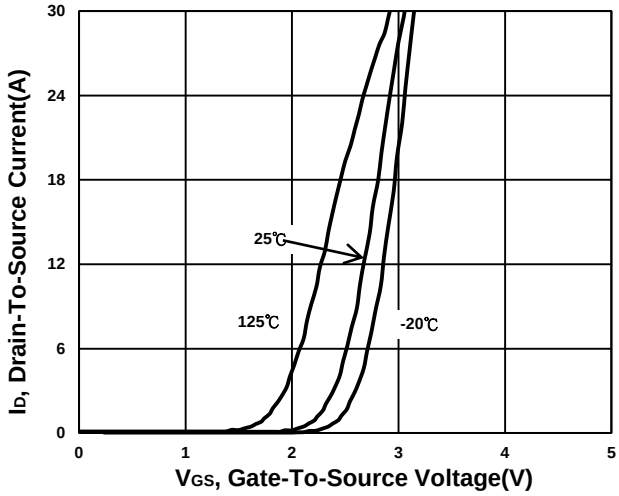
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 20A		63		S
DYNAMIC						
Input Capacitance[4]	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz	493	617	740	pF
Output Capacitance[4]	C_{oss}		96	120	144	
Reverse Transfer Capacitance[4]	C_{rss}		50	84	118	
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz	1.3	2.5	3.8	Ω
Total Gate Charge[2,4]	Q_g	V_{GS} = 10 V , V_{DS} = 15V , I_D = 20A	11	14	17	nC
Gate-Source Charge[2,4]	Q_{gs}		1.2	1.5	1.8	
Gate-Drain Charge[2,4]	Q_{gd}		2.2	3.7	5.2	
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 15V $I_D \cong$ 20A, V_{GS} = 10V, R_{GEN} =6Ω		17		nS
Rise Time[2]	t_r			41		
Turn-Off Delay Time[2]	$t_{d(off)}$			55		
Fall Time[2]	t_f			30		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				29	A
Forward Voltage[1]	V_{SD}	I_F = 20A, V_{GS} = 0V			1.1	V
Reverse Recovery Time[4]	t_{rr}	I_F = 20A, dI_F/dt = 100A / μS	5	10	18	nS
Reverse Recovery Charge[4]	Q_{rr}		1.5	3	4.5	nC

[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Package limitation current is 28A
[4]Guaranteed by design, not subject to production testing.

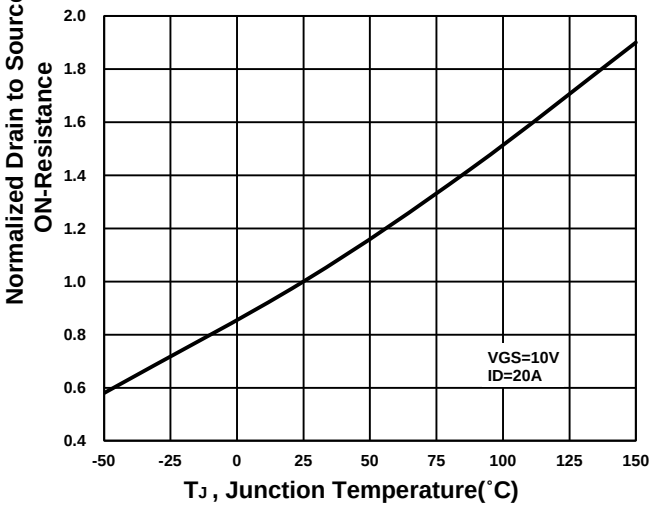
Output Characteristics



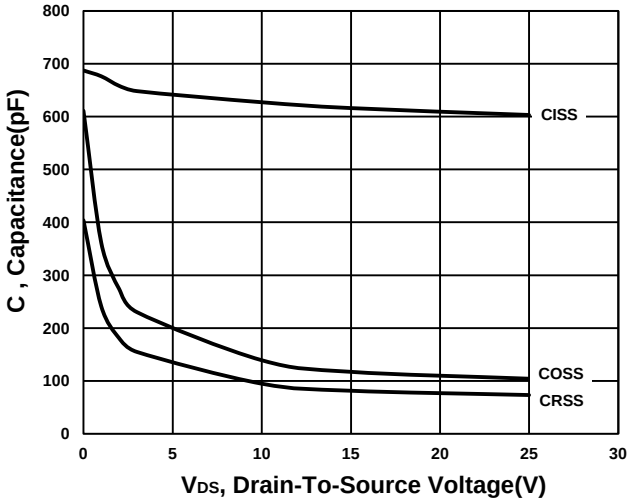
Transfer Characteristics



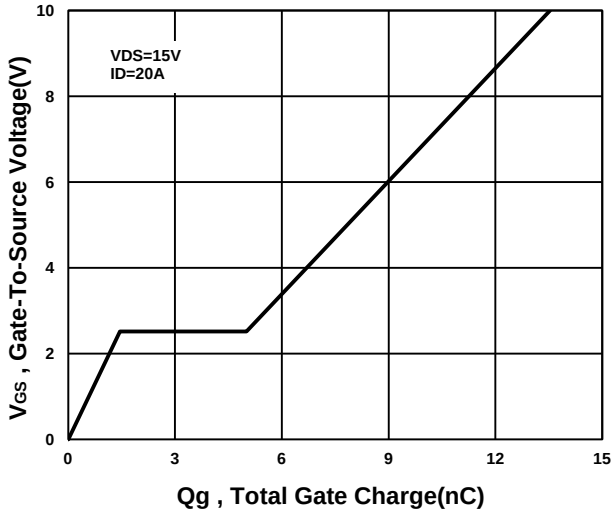
On-Resistance VS Temperature



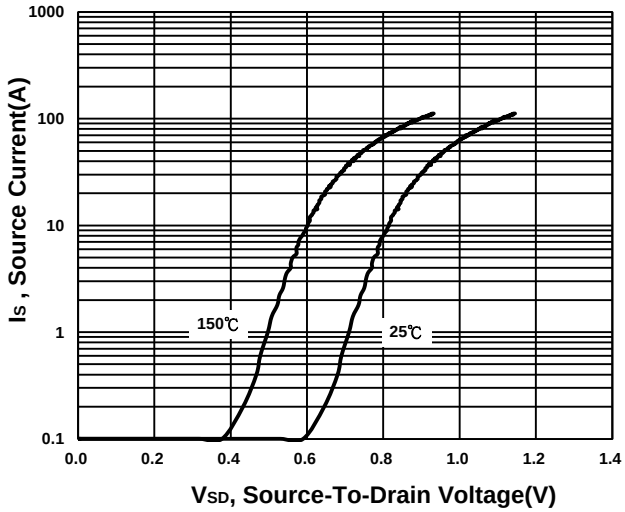
Capacitance Characteristic



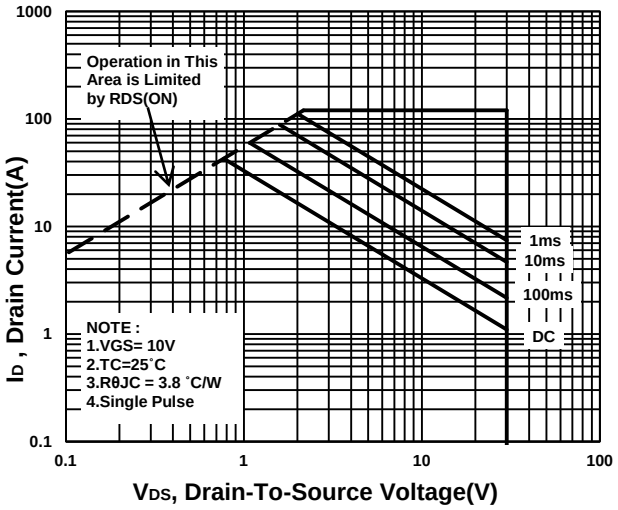
Gate charge Characteristics



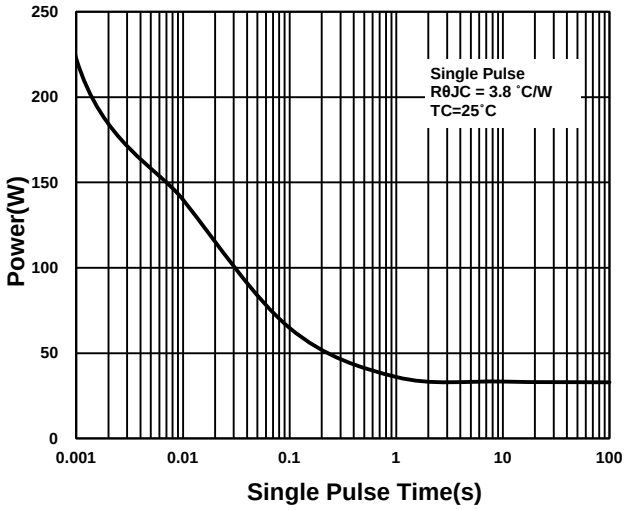
Source-Drain Diode Forward Voltage



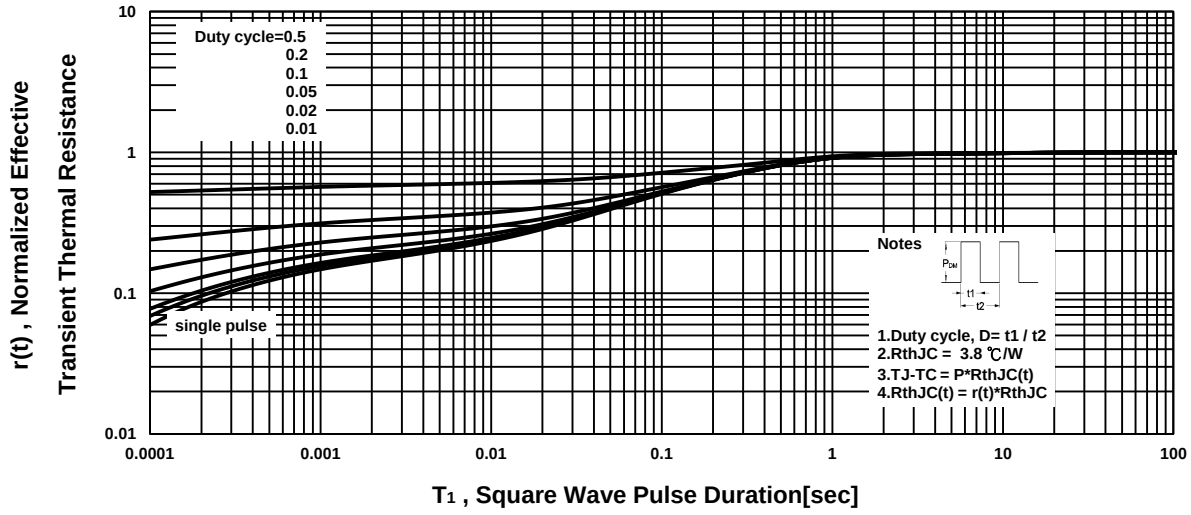
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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