NIKO-SEM

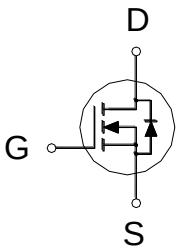
N-Channel Enhancement Mode Field Effect Transistor

PR802BA33

PowerFET

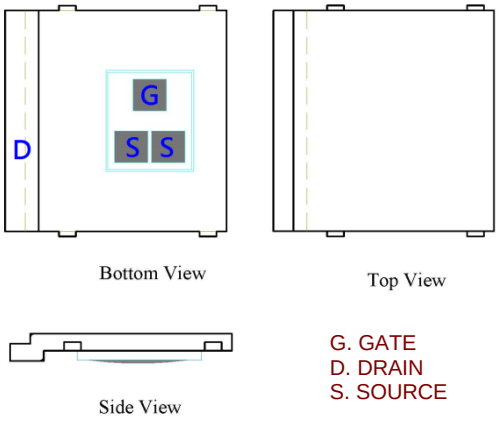
PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
30V	4mΩ	74A



Features

- 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.
- 100% UIS Tested & 100% Rg Tested.
- Patent No. US9,947,551.



Applications

- Protection Circuits Applications.
- Computer for DC to DC Converters Applications.

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[4]	T_C = 25 °C	I_D	74	A
	T_C = 100 °C		47	
	T_A = 25 °C		22	
	T_A = 70 °C		17	
Pulsed Drain Current[1]		I_{DM}	110	
Avalanche Current		I_{AS}	24	
Avalanche Energy	L = 0.1mH	E_{AS}	28.8	mJ
Power Dissipation[3]	T_C = 25 °C	P_D	35	W
	T_C = 100 °C		14	
	T_A = 25 °C		3.1	
	T_A = 70 °C		2	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE		SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient[2]	t ≦10s	$R_{\theta JA}$		40	°C / W
Junction-to-Ambient[2]	Steady-State	$R_{\theta JA}$		62	
Junction-to-Case	Top	$R_{\theta JC}$		3.5	

[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.
[4]The maximum current rating is package limited.

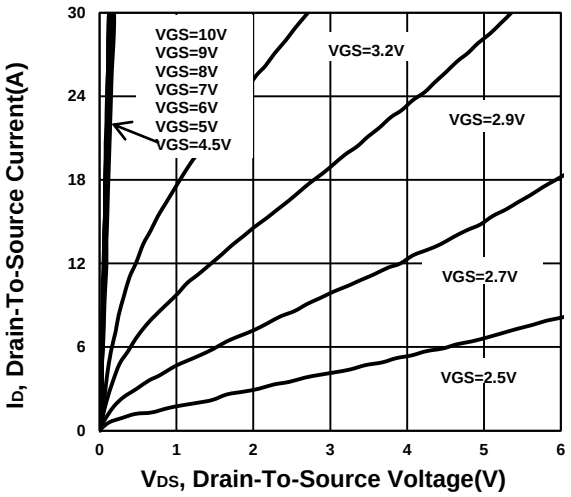
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

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	1.3	1.6	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 = 55 °C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 9A		5.6	7.3	mΩ
		V_{GS} = 10V, I_D = 9A		3.4	4	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 9A		32		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz		1106		pF
Output Capacitance	C_{oss}			699		
Reverse Transfer Capacitance	C_{rss}			55		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		1.3		Ω
Total Gate Charge[2]	Q_g (V_{GS} = 10V)	V_{DS} = 15V , V_{GS} = 10V, I_D = 9A		22		nC
	Q_g (V_{GS} = 4.5V)			12		
Gate-Source Charge[2]	Q_{gs}			2.5		
Gate-Drain Charge[2]	Q_{gd}			5.7		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 15V , I_D ≅ 9A, V_{GS} = 10V, R_{GEN} =6Ω		13		nS
Rise Time[2]	t_r			66		
Turn-Off Delay Time[2]	$t_{d(off)}$			36		
Fall Time[2]	t_f			61		

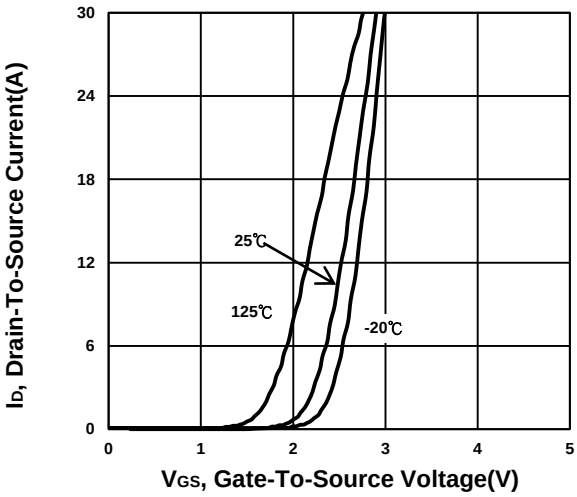
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				29	A
Forward Voltage[1]	V_{SD}	I_F = 9A, V_{GS} = 0V			1.2	V
Reverse Recovery Time	t_{rr}	I_F = 9A, dI_F/dt = 100A / μS		37		nS
Reverse Recovery Charge	Q_{rr}			24		nC

[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]The maximum current rating is package limited.

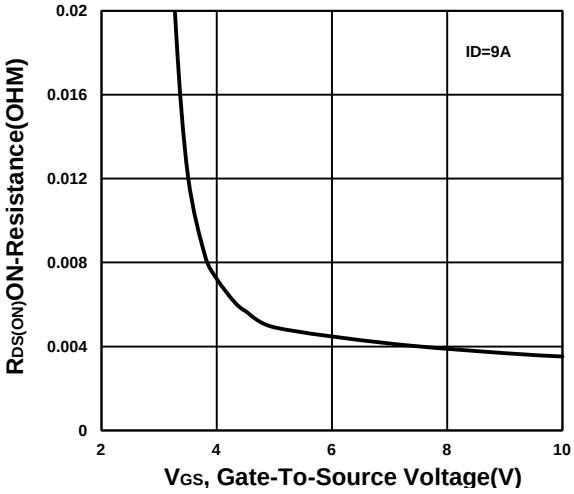
Output Characteristics



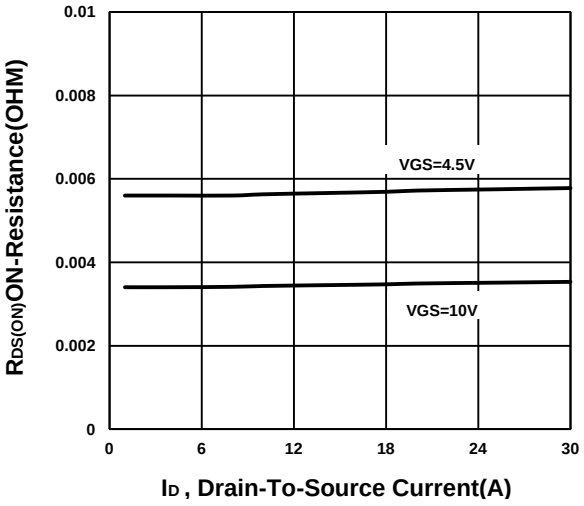
Transfer Characteristics



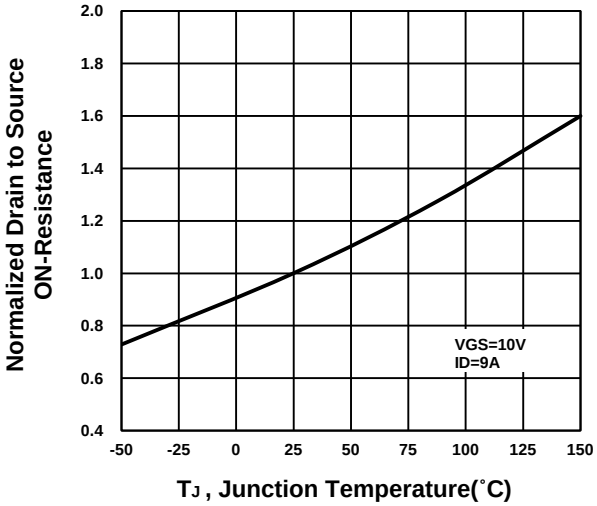
On-Resistance VS Gate-To-Source Voltage



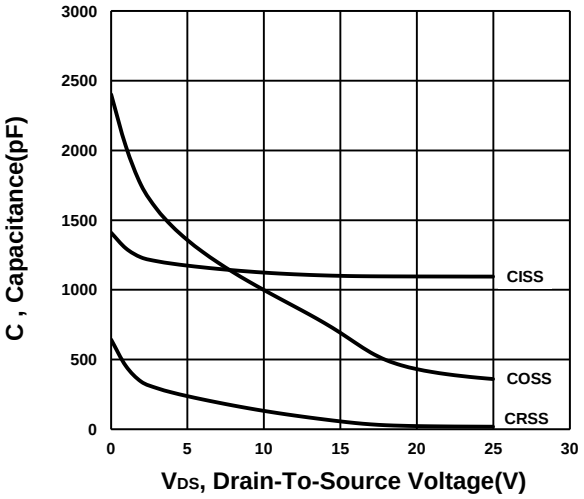
On-Resistance VS Drain Current



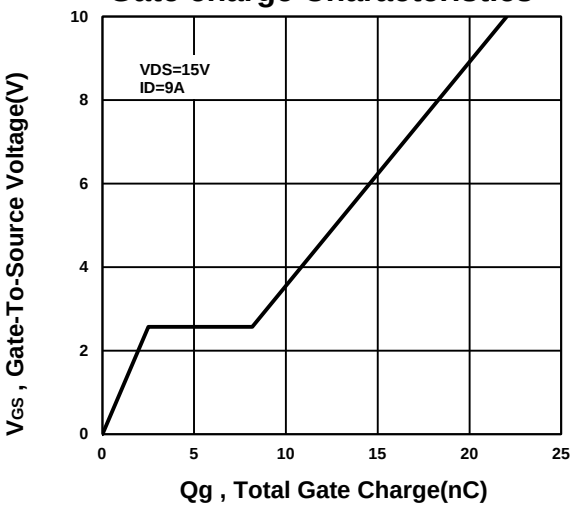
On-Resistance VS Temperature



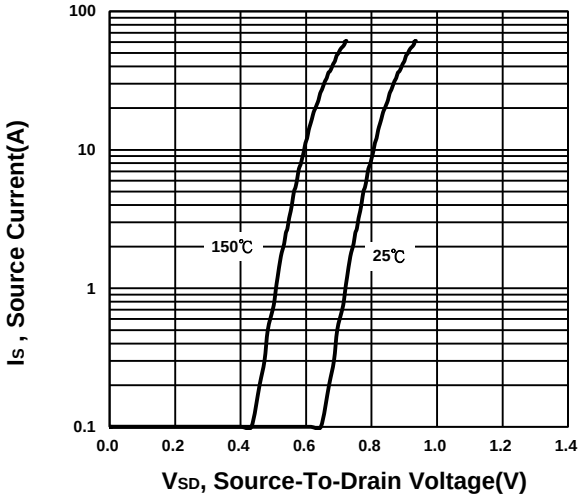
Capacitance Characteristic



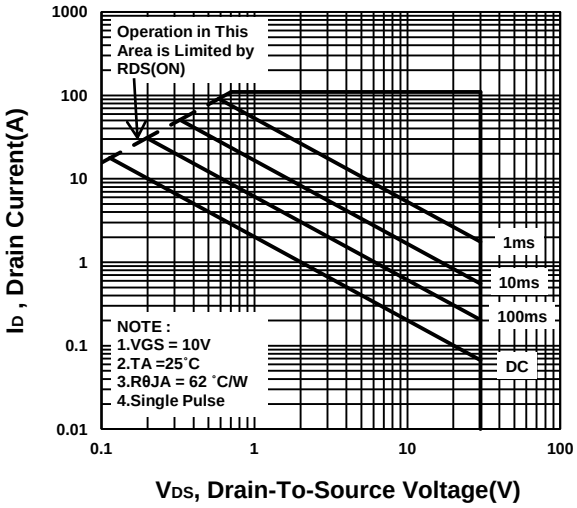
Gate charge Characteristics



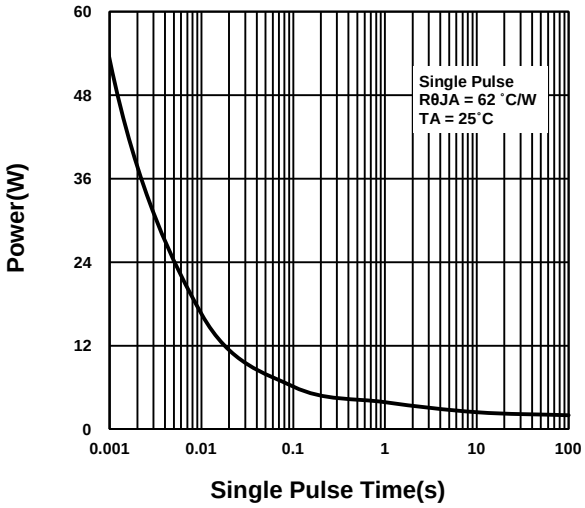
Source-Drain Diode Forward Voltage



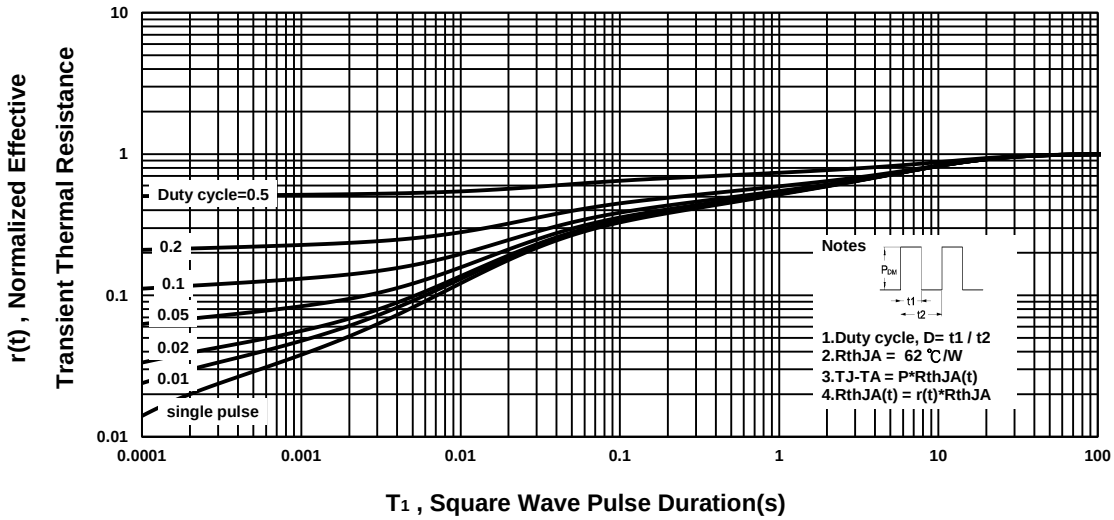
Safe Operating Area



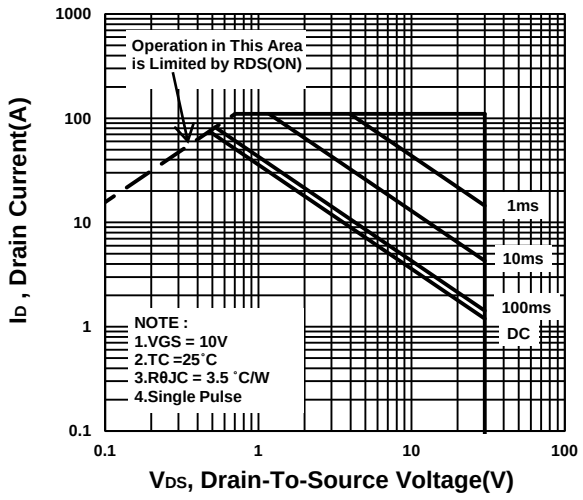
Single Pulse Maximum Power Dissipation



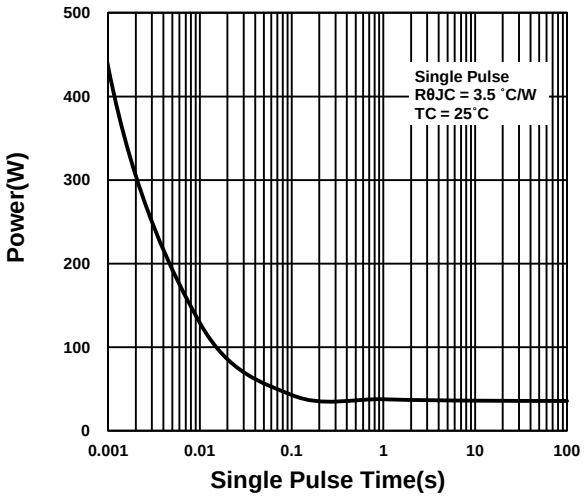
Transient Thermal Response Curve



Safe Operating Area, (Top)



Single Pulse Maximum Power Dissipation, (Top)



Transient Thermal Response Curve, (Top)