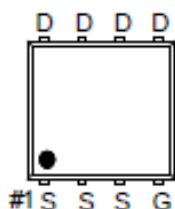


P2003BEA

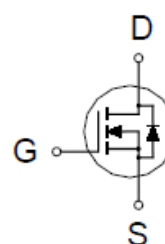
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
30V	20mΩ @ $V_{GS} = 10V$	10A



PDFN 3x3S



ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ °C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	$T_C = 25\text{ °C}$	I_D	28	A
	$T_C = 100\text{ °C}$		18	
	$T_A = 25\text{ °C}$		10	
	$T_A = 70\text{ °C}$		8	
Pulsed Drain Current ¹		I_{DM}	70	
Avalanche Current		I_{AS}	21.5	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	23	mJ
Power Dissipation	$T_C = 25\text{ °C}$	P_D	25	W
	$T_C = 100\text{ °C}$		10	
	$T_A = 25\text{ °C}$		3.125	
	$T_A = 70\text{ °C}$		2	
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

P2003BEA

N-Channel Enhancement Mode MOSFET

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE		SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$t \leq 10s$	$R_{\theta JA}$		40	°C / W
Junction-to-Ambient	Steady-State	$R_{\theta JA}$		75	
Junction-to-Case	Steady-State	$R_{\theta JC}$		5	

¹Pulse width limited by maximum junction temperature.

ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.5	2.5	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 24V, V_{GS} = 0V$			1	μA
		$V_{DS} = 20V, V_{GS} = 0V, T_J = 55^\circ C$			10	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = 5V, V_{GS} = 10V$	70			A
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 6A$		23	31	m Ω
		$V_{GS} = 10V, I_D = 8A$		14	20	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 10V, I_D = 8A$		13		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$		484		pF
Output Capacitance	C_{oss}			169		
Reverse Transfer Capacitance	C_{rss}			106		
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$		1.75		Ω
Total Gate Charge ²	$Q_g(V_{GS}=10V)$	$V_{DS} = 0.5V_{(BR)DSS}, I_D = 8A$		10		nC
	$Q_g(V_{GS}=4.5V)$			4.4		
Gate-Source Charge ²	Q_{gs}			2		
Gate-Drain Charge ²	Q_{gd}			3		
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DD} = 15V, I_D \cong 8A,$ $V_{GEN} = 10V, R_G = 3\Omega$		5		nS
Rise Time ²	t_r			4		
Turn-Off Delay Time ²	$t_{d(off)}$			16		
Fall Time ²	t_f			3		

P2003BEA

N-Channel Enhancement Mode MOSFET

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25\text{ }^{\circ}\text{C}$)

Continuous Current	I_S			2.2	A
Forward Voltage ¹	V_{SD}	$I_F = 8\text{A}, V_{GS} = 0\text{V}$		1.4	V
Reverse Recovery Time	t_{rr}	$I_F = 8\text{A}, dI_F/dt = 100\text{A} / \mu\text{S}$		20	nS
Reverse Recovery Charge	Q_{rr}			10	nC

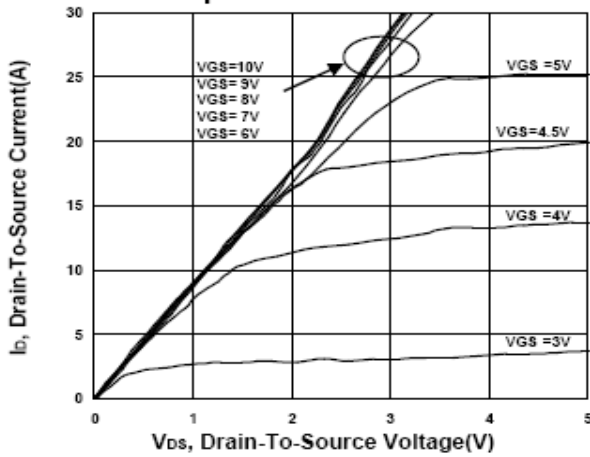
¹Pulse test : Pulse Width $\leq 300\text{ }\mu\text{sec}$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

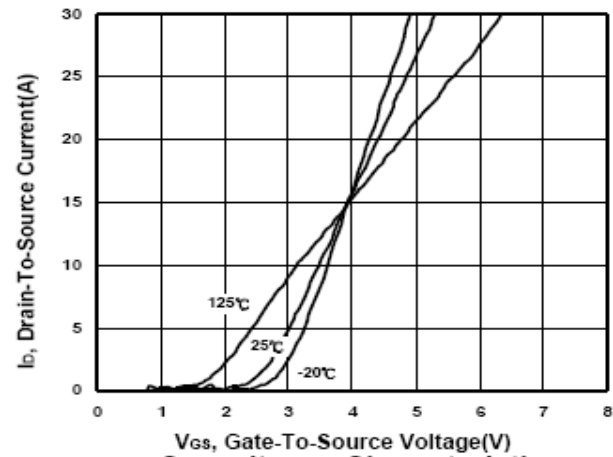
P2003BEA

N-Channel Enhancement Mode MOSFET

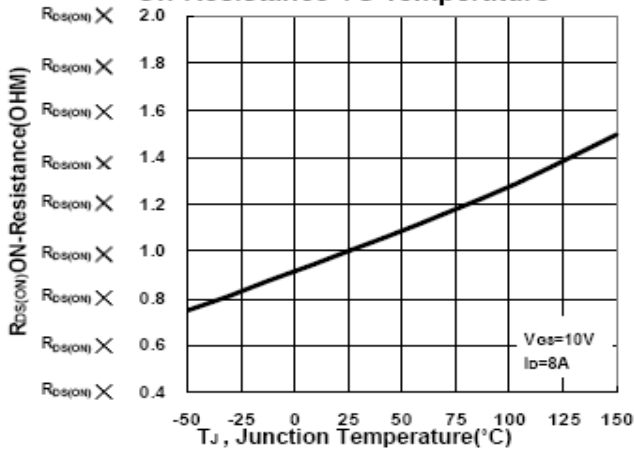
Output Characteristics



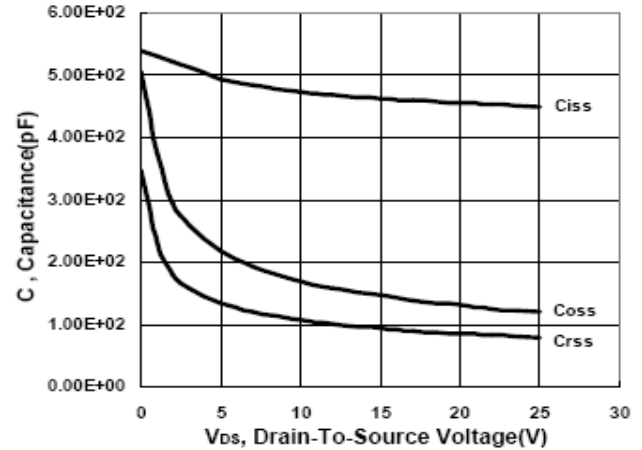
Transfer Characteristics



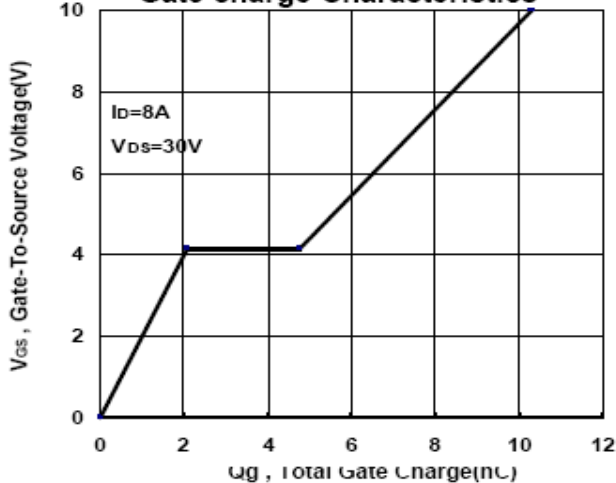
On-Resistance VS Temperature



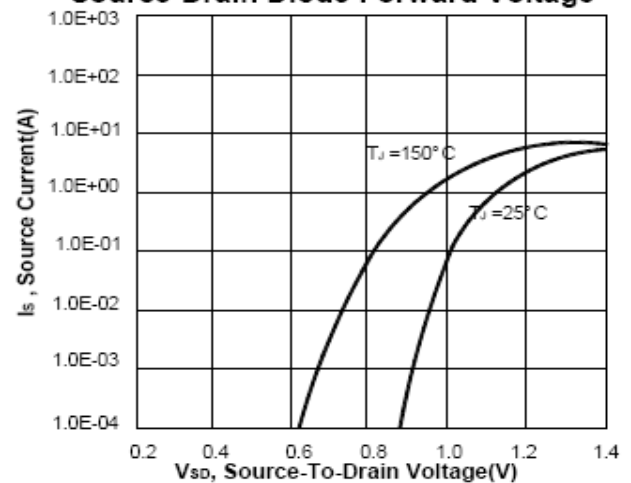
Capacitance Characteristic



Gate charge Characteristics



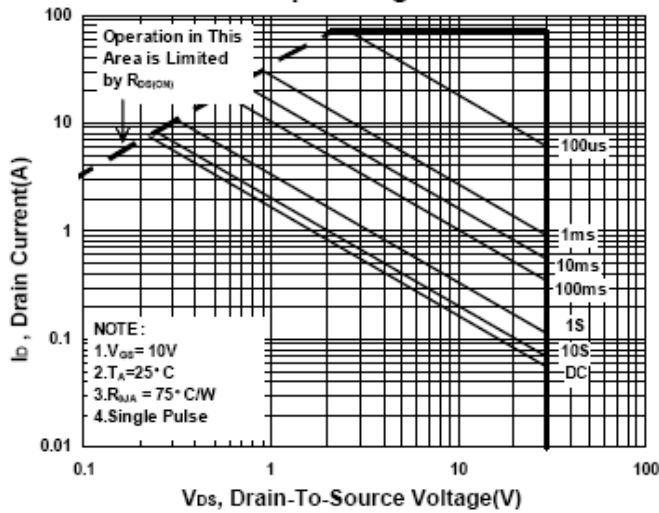
Source-Drain Diode Forward Voltage



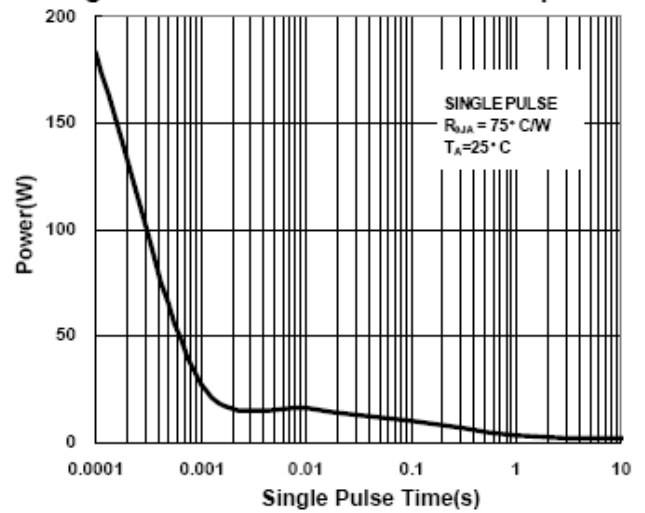
P2003BEA

N-Channel Enhancement Mode MOSFET

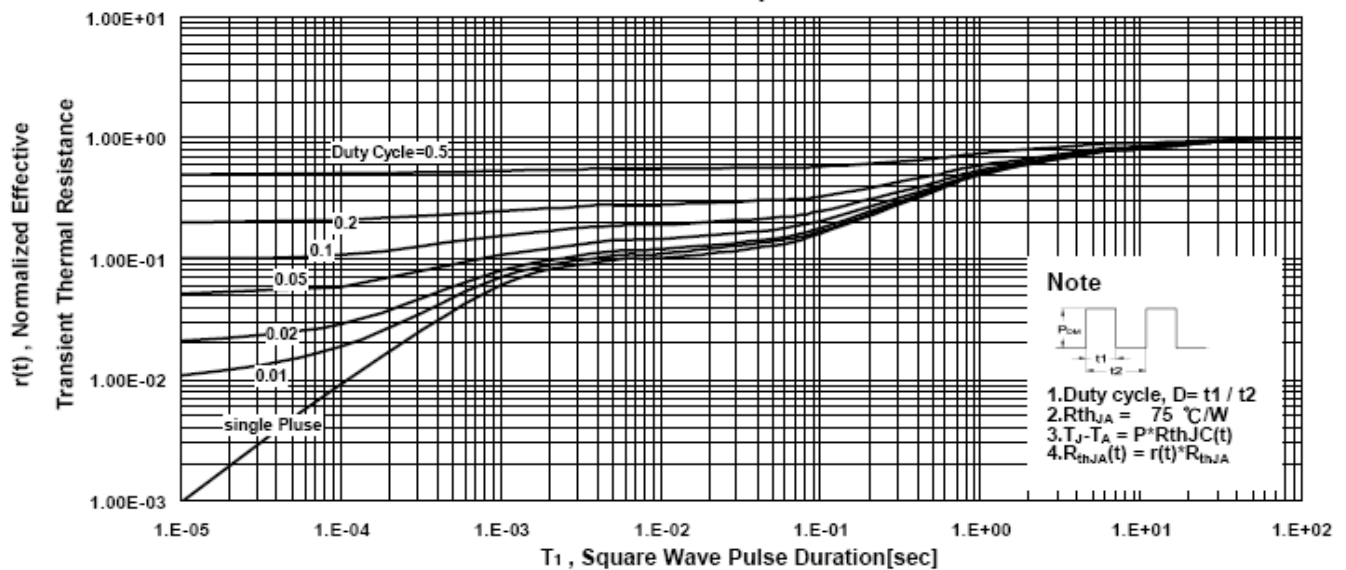
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



P2003BEA

N-Channel Enhancement Mode MOSFET

Package Dimension

PDFN 3x3S MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	2.9	3.0	3.1	I		0.20	
B	2.35	2.4	2.55	J	0.27	0.35	0.4
C	2.9	3.0	3.1	K		0.45	
D	0.32	0.4	0.45	L	0.7	0.8	0.9
E	2.0	2.1	2.2				
F	0.32	0.42	0.47				
G		0.65					
H	0.27	0.35	0.525				

