

PE636BA

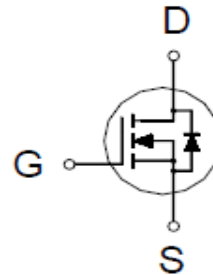
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
30V	9mΩ @ $V_{GS} = 10V$	33A



PDFN 3X3P



ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^{\circ}\text{C}$ 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 ³	$T_c = 25\text{ }^{\circ}\text{C}$	I_D	33	A
	$T_c = 100\text{ }^{\circ}\text{C}$		21	
	$T_A = 25\text{ }^{\circ}\text{C}$		10	
	$T_A = 70\text{ }^{\circ}\text{C}$		8	
Pulsed Drain Current ¹		I_{DM}	100	
Avalanche Current		I_{AS}	20	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	20	mJ
Power Dissipation	$T_c = 25\text{ }^{\circ}\text{C}$	P_D	17.8	W
	$T_c = 100\text{ }^{\circ}\text{C}$		7	
	$T_A = 25\text{ }^{\circ}\text{C}$		1.7	
	$T_A = 70\text{ }^{\circ}\text{C}$		1	
Operating Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	$^{\circ}\text{C}$

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient ²	$R_{\theta JA}$		75	$^{\circ}\text{C} / \text{W}$
Junction-to-Case	$R_{\theta JC}$		7	

¹Pulse width limited by maximum junction temperature.

²The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^{\circ}\text{C}$.

³Package limitation current is 13A

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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	30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.3	1.8	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 = 10A		9.9	12	mΩ
		V _{GS} = 10V , I _D = 10A		7.4	9	
Forward Transconductance ¹	g _{fs}	V _{DS} = 10V, I _D = 10A		34		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 15V, f = 1MHz		774		pF
Output Capacitance	C _{oss}			139		
Reverse Transfer Capacitance	C _{rss}			81		
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		3.1		Ω
Total Gate Charge ²	Q _g (V _{GS} =10V)	V _{DS} = 15V , I _D = 10A		15.5		nC
	Q _g (V _{GS} =4.5V)			8.3		
Gate-Source Charge ²	Q _{gs}			2.2		
Gate-Drain Charge ²	Q _{gd}			4.4		
Turn-On Delay Time ²	t _{d(on)}	V _{DD} = 15V, I _D ≅ 10A, V _{GEN} = 10V, R _G = 6Ω		23		nS
Rise Time ²	t _r			20		
Turn-Off Delay Time ²	t _{d(off)}			40		
Fall Time ²	t _f			20		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _J = 25 °C)						
Continuous Current ³	I _S				14.8	A
Forward Voltage ¹	V _{SD}	I _F = 10A, V _{GS} = 0V			1.2	V
Reverse Recovery Time	t _{rr}	I _F = 10A, dI _F /dt = 100A / μS		9.5		nS
Reverse Recovery Charge	Q _{rr}			1.4		nC

¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

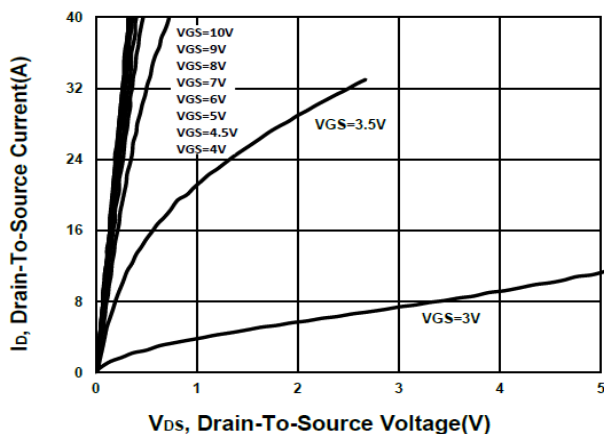
²Independent of operating temperature.

³Package limitation current is 13A.

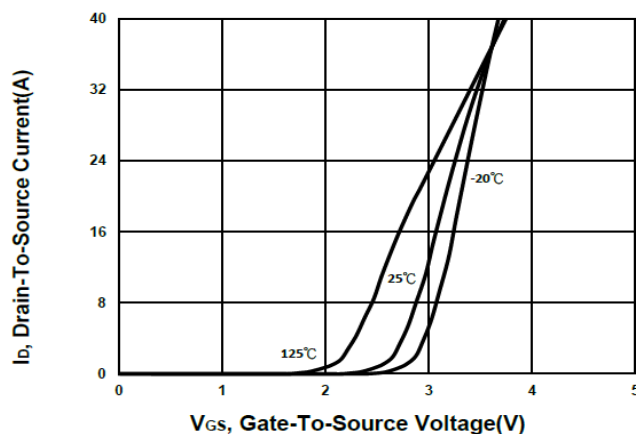
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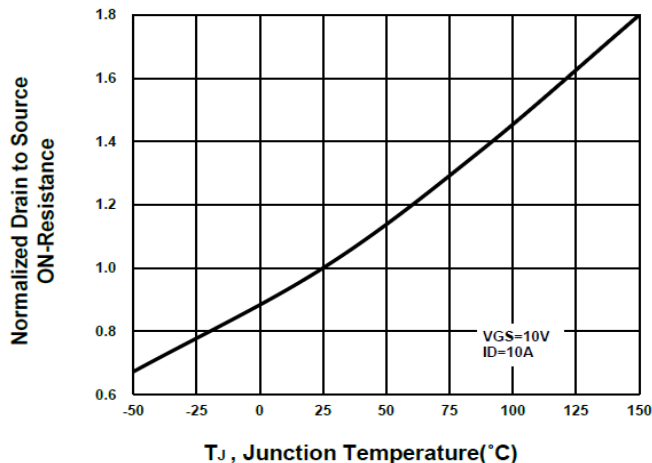
Output Characteristics



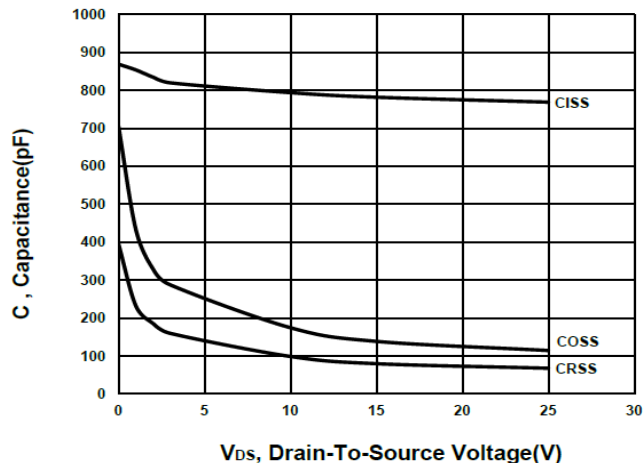
Transfer Characteristics



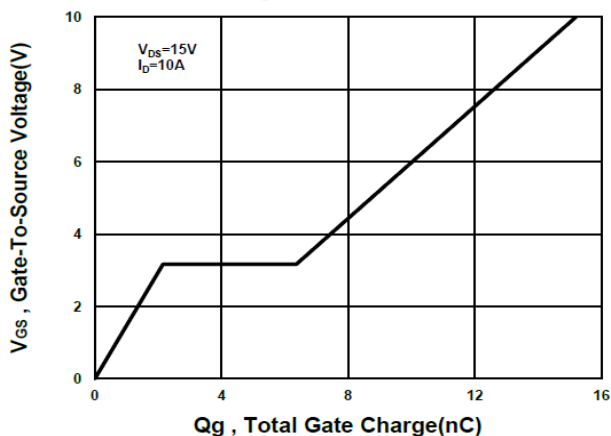
On-Resistance VS Temperature



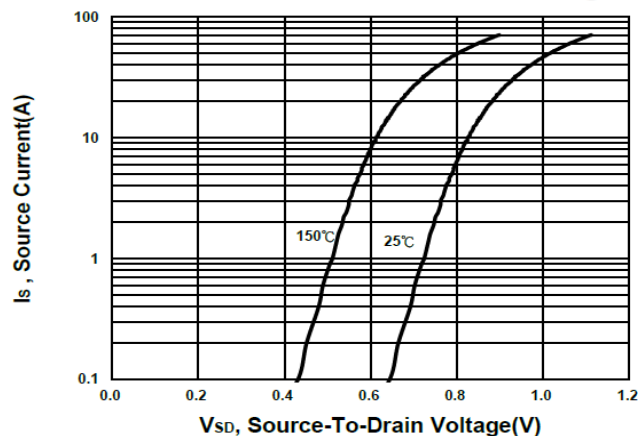
Capacitance Characteristic



Gate charge Characteristics



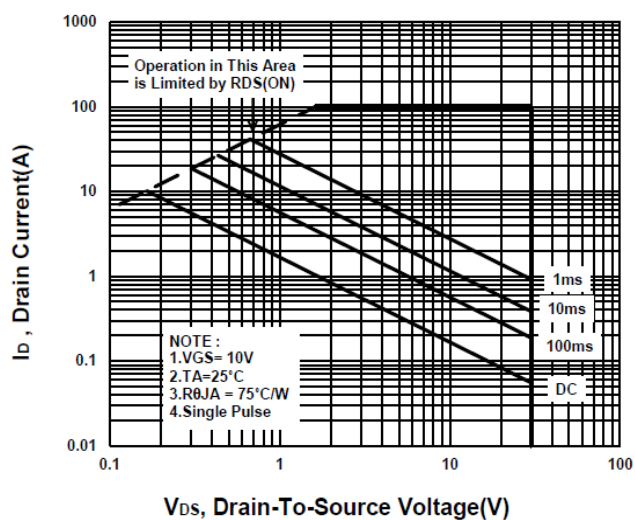
Source-Drain Diode Forward Voltage



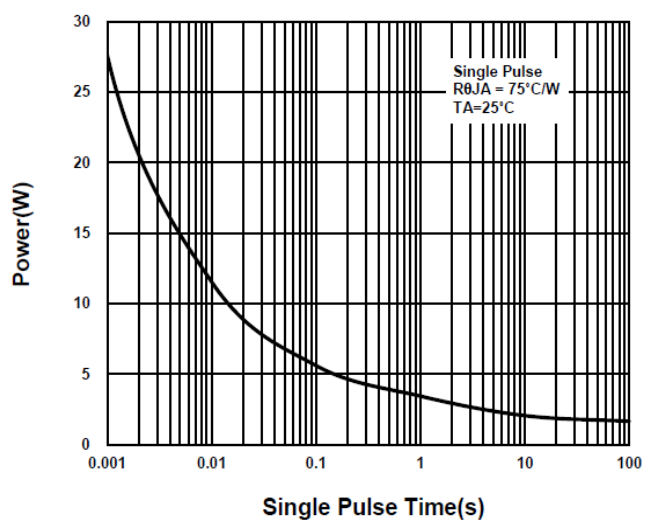
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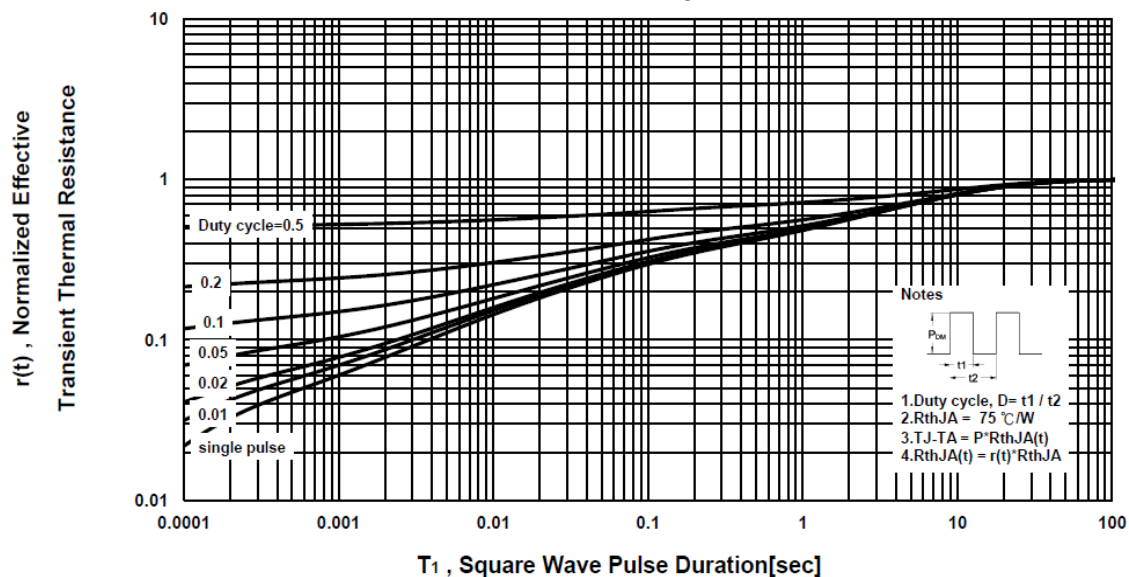
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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Package Dimension

PDFN 3x3P MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	3	3.3	3.6	I	0.65	0.8	0.9
B	2.88	3	3.2	J	0.1	0.15	0.25
C	2.9	3	3.25	K	0.59		
D	2.29	2.45	2.69	L	0°	10°	12°
E	3	3.3	3.6	M	0.14	0.3	0.4
F	0	0.1	0.2	N	0.55	0.65	0.75
G	1.35	1.75	2.2	O		0.2	
H	0.15	0.3	0.55	P	0		0.2

