

PE528BA

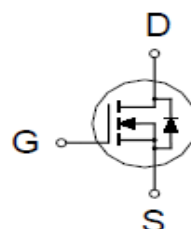
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D^3
30V	19mΩ @ $V_{GS} = 10V$	21A



PDFN 3X3P



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	V
Continuous Drain Current ³	$T_c = 25\text{ °C}$	I_D	21	A
	$T_c = 100\text{ °C}$		14	
	$T_A = 25\text{ °C}$		8	
	$T_A = 70\text{ °C}$		6.4	
Pulsed Drain Current ¹		I_{DM}	40	
Avalanche Current		I_{AS}	17	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	15	mJ
Power Dissipation	$T_c = 25\text{ °C}$	P_D	15	W
	$T_c = 100\text{ °C}$		6.2	
	$T_A = 25\text{ °C}$		2	
	$T_A = 70\text{ °C}$		1.3	
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	$R_{\theta JA}$		60	°C / W
Junction-to-Case	$R_{\theta JC}$		8	

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 $T_A = 25\text{ °C}$.

³Package limitation current is 15A.

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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	1.2	1.5	2.5	
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	
On-State Drain Current ¹	I _{D(ON)}	V _{DS} = 5V, V _{GS} = 10V	40			A
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = 4.5V, I _D = 6.8A		20	25	mΩ
		V _{GS} = 10V , I _D = 8A		17	19	
Forward Transconductance ¹	g _{fs}	V _{DS} = 10V, I _D = 8A		22		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 15V, f = 1MHz		526		pF
Output Capacitance	C _{oss}			76		
Reverse Transfer Capacitance	C _{rss}			62		
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		2.2	3	Ω
Total Gate Charge ²	Q _{g(VGS=10V)}	V _{DS} = 15V , I _D = 8A		14.4		nC
	Q _{g(VGS=4.5V)}			7.8		
Gate-Source Charge ²	Q _{gs}			2		
Gate-Drain Charge ²	Q _{gd}			3.8		
Turn-On Delay Time ²	t _{d(on)}	V _{DD} = 15V, I _D ≅ 8A, V _{GEN} = 10V, R _G = 6Ω		14		nS
Rise Time ²	t _r			10		
Turn-Off Delay Time ²	t _{d(off)}			30		
Fall Time ²	t _f			10		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _J = 25 °C)						
Continuous Current ³	I _S				21	A
Forward Voltage ¹	V _{SD}	I _F = 8A, V _{GS} = 0V			1	V
Reverse Recovery Time	t _{rr}	I _F = 8A, dl _F /dt = 100A / μS		12		nS
Reverse Recovery Charge	Q _{rr}			3		nC

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

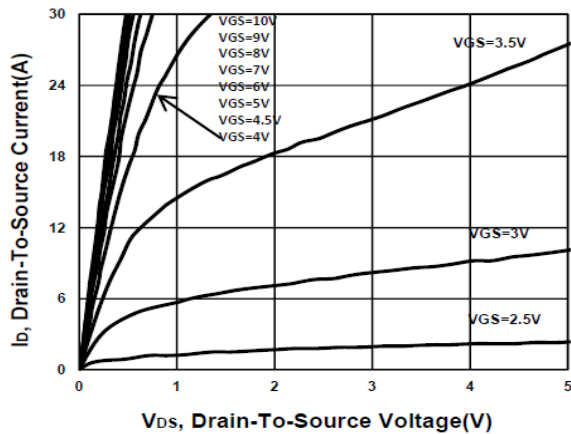
²Independent of operating temperature.

³Package limitation current is 15A.

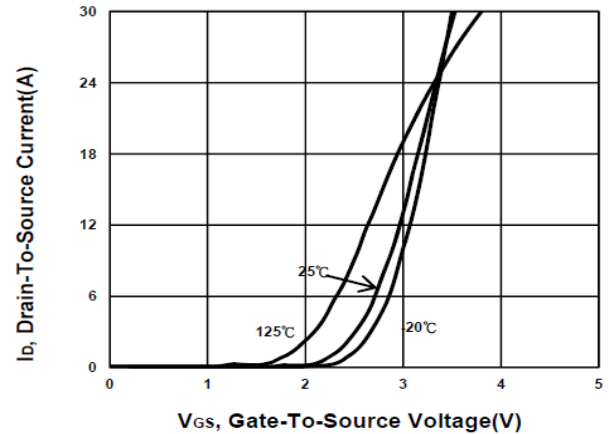
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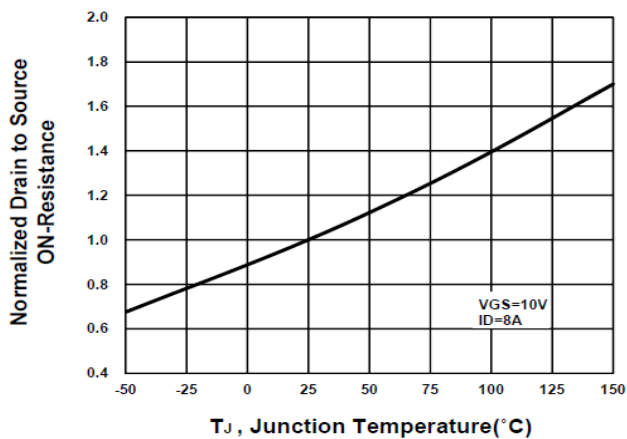
Output Characteristics



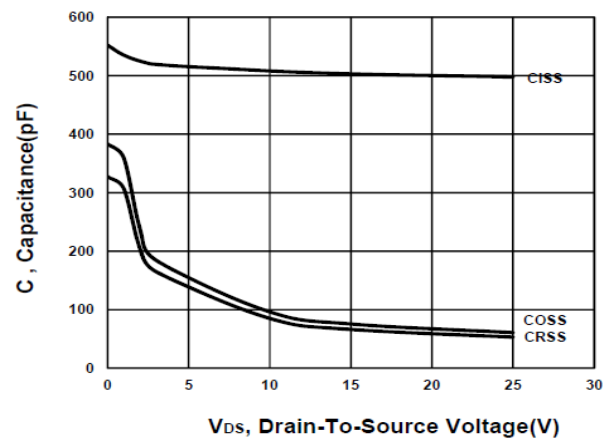
Transfer Characteristics



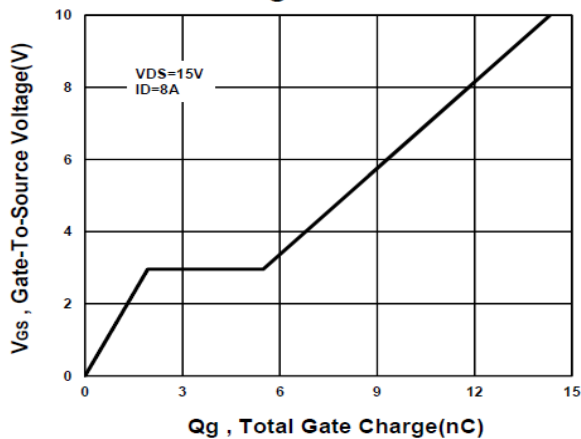
On-Resistance VS Temperature



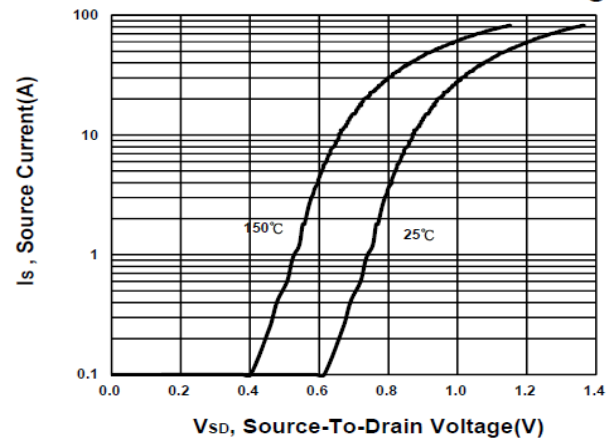
Capacitance Characteristic



Gate charge Characteristics



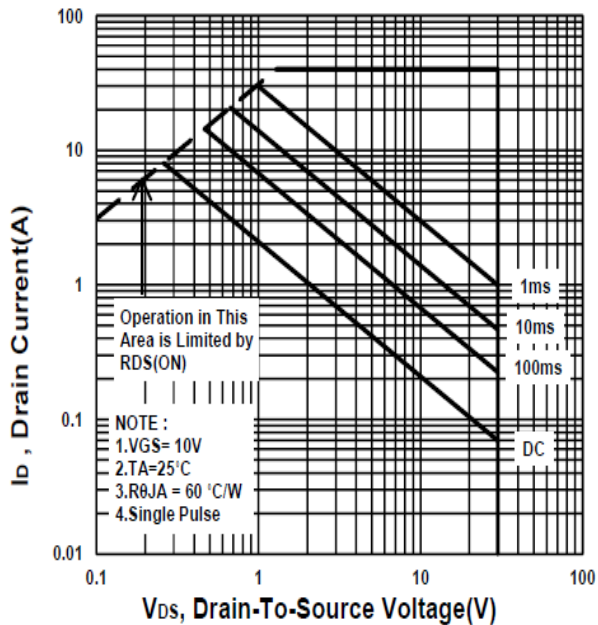
Source-Drain Diode Forward Voltage



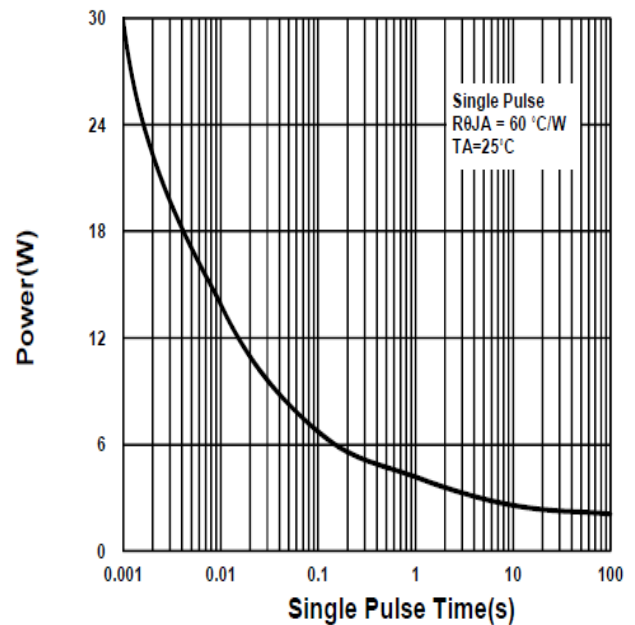
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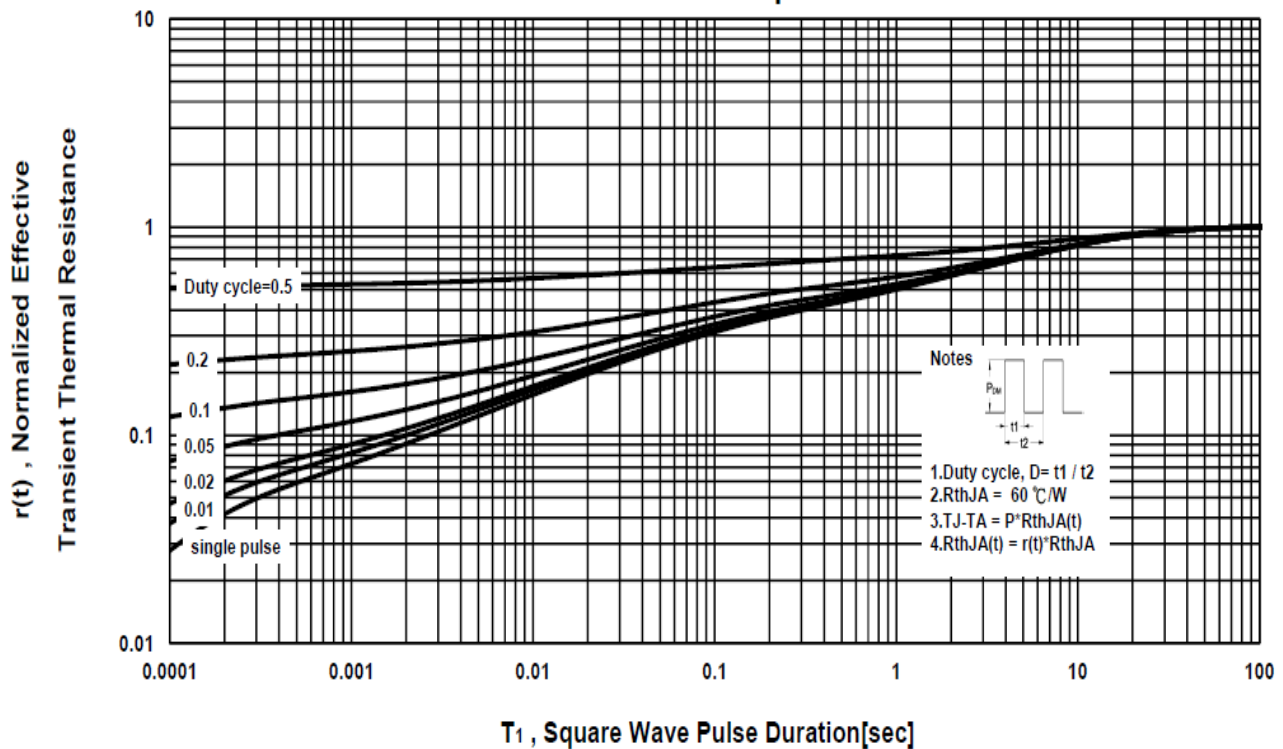
Safe Operating Area



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		3.6	I	0.7		1.12
B	2.88		3.2	J	0.1		0.33
C	2.9		3.2	K	0.6		
D	1.98		2.69	L	0°	10°	12°
E	3		3.6	M	0.14		0.41
F	0		0.455	N	0.6		0.7
G	1.47		2.2	O	0.12		0.36
H	0.15		0.56	P	0		0.2

