

PE507BA

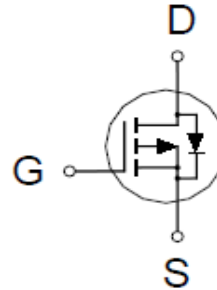
P-Channel Logic Level Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-30V	14mΩ @ $V_{GS} = -10V$	-28A



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}	±25	V
Continuous Drain Current ³	$T_C = 25\text{ °C}$	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}	-50	
Avalanche Current		I_{AS}	-42	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	87	mJ
Power Dissipation	$T_C = 25\text{ °C}$	P_D	16	W
	$T_C = 100\text{ °C}$		6	
	$T_A = 25\text{ °C}$		2	
	$T_A = 70\text{ °C}$		1.3	
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	$R_{\theta JC}$		7.5	

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 22A.

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

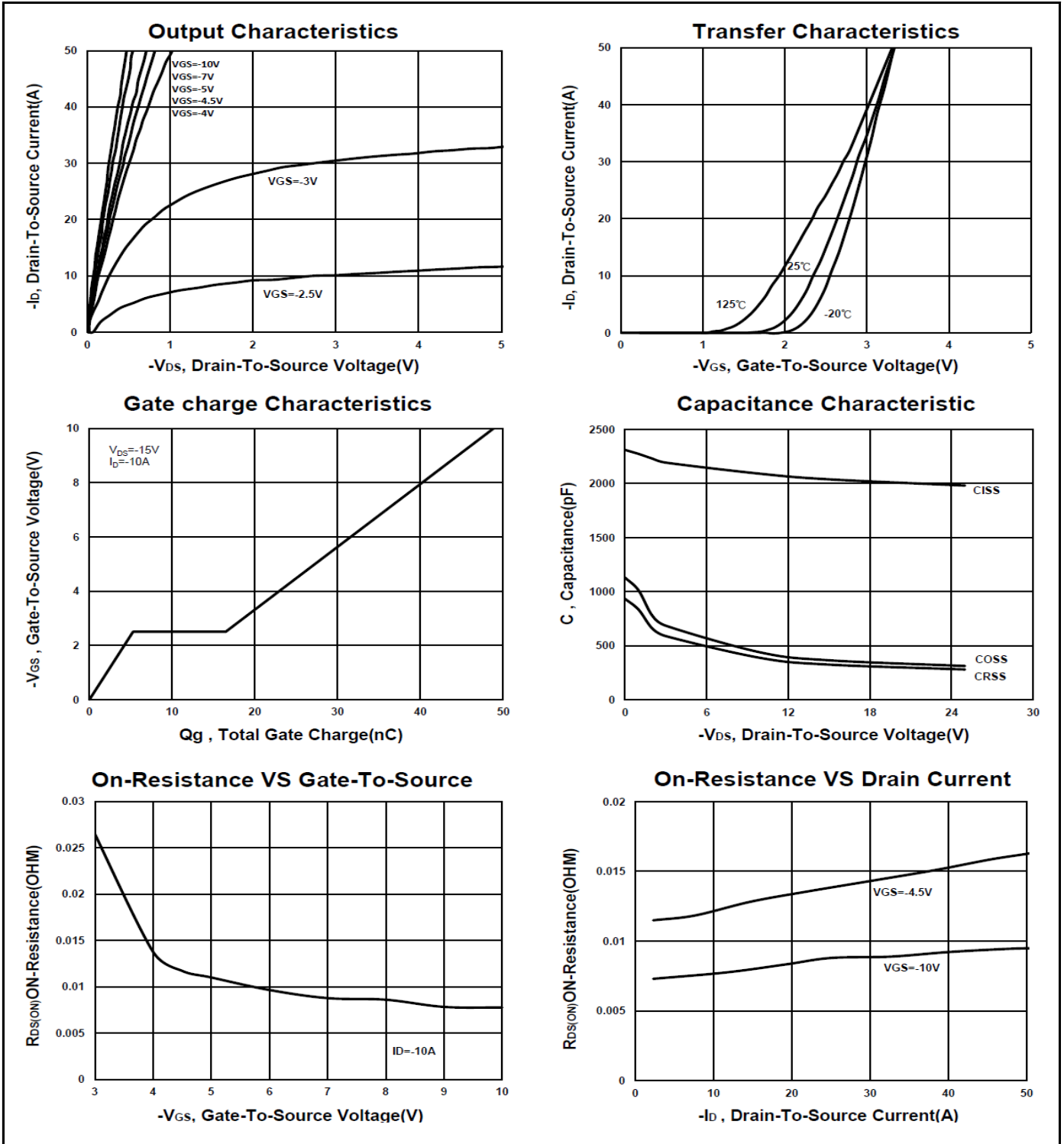
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1	-1.5	-3	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±25V			±100	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		14.5	22	mΩ
		V _{GS} = -10V, I _D = -10A		9.6	14	
Forward Transconductance ¹	g _{fs}	V _{DS} = -10V, I _D = -10A		32		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = -15V, f = 1MHz		2100		pF
Output Capacitance	C _{oss}			365		
Reverse Transfer Capacitance	C _{rss}			327		
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		3		Ω
Total Gate Charge ²	Q _g	V _{DS} = -15V, V _{GS} = -10V, I _D = -10A		49.1		nC
Gate-Source Charge ²	Q _{gs}			6		
Gate-Drain Charge ²	Q _{gd}			12.3		
Turn-On Delay Time ²	t _{d(on)}	V _{DD} = -15V, I _D ≅ -10A, V _{GS} = -10V, R _{GEN} = 6Ω		24		nS
Rise Time ²	t _r			24		
Turn-Off Delay Time ²	t _{d(off)}			85		
Fall Time ²	t _f			50		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I _S				-23	A
Forward Voltage ¹	V _{SD}	I _F = -10A, V _{GS} = 0V			-1.2	V
Reverse Recovery Time	t _{rr}	I _F = -10A, dI/dt = 100A / μS		20.5		nS
Reverse Recovery Charge	Q _{rr}				8.3	

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

²Independent of operating temperature.

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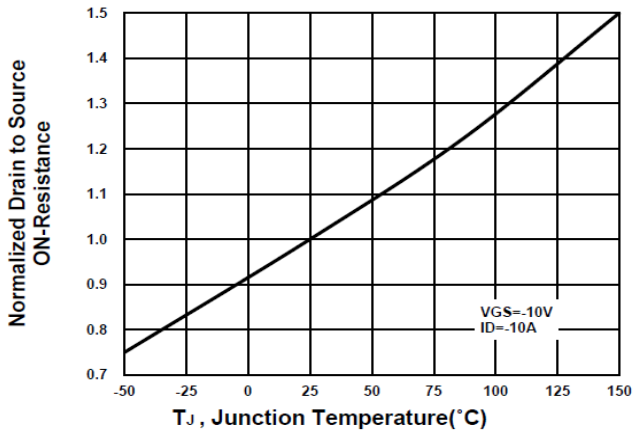
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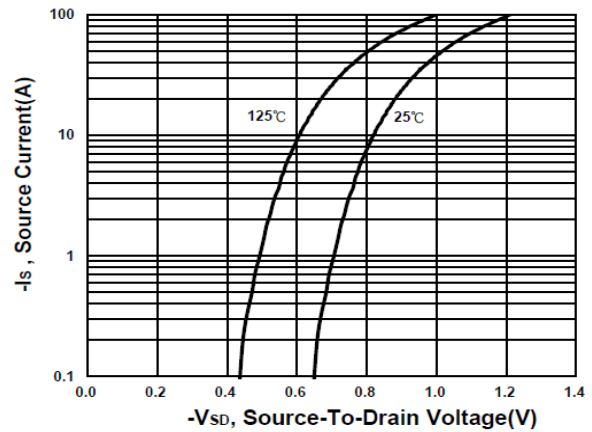
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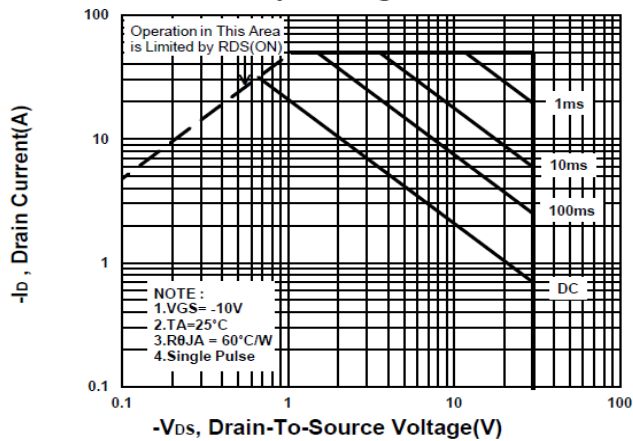
On-Resistance VS Temperature



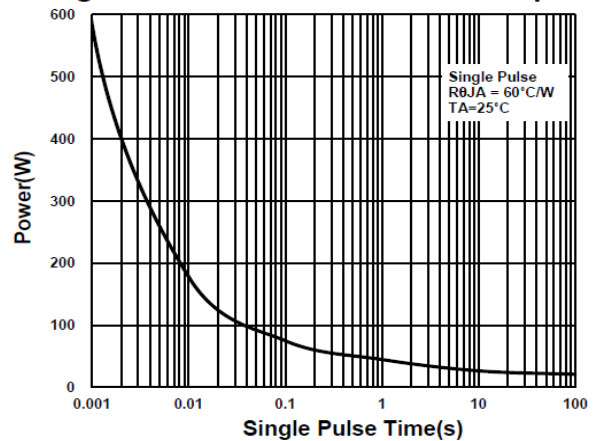
Source-Drain Diode Forward Voltage



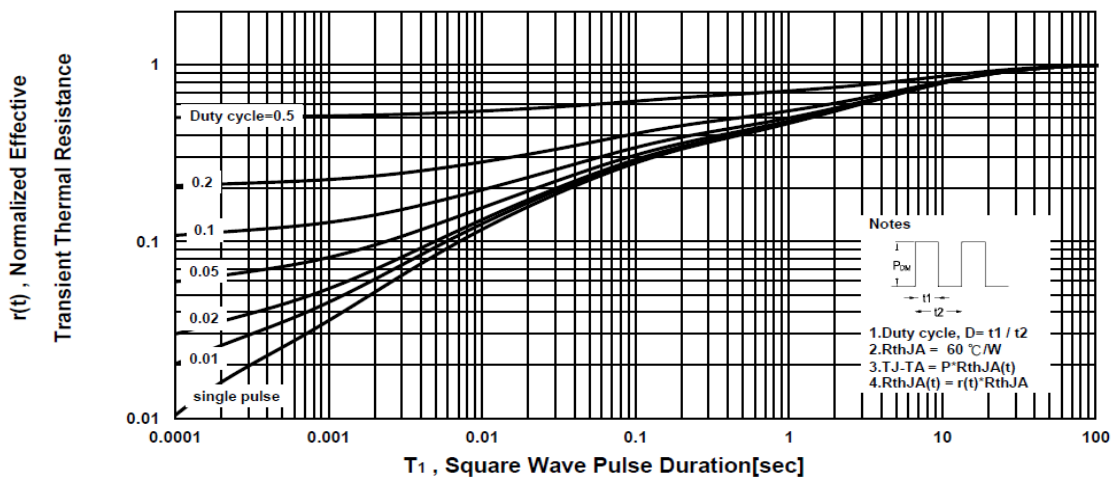
Safe Operating Area



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

