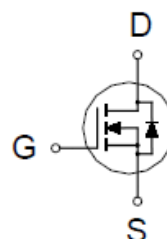
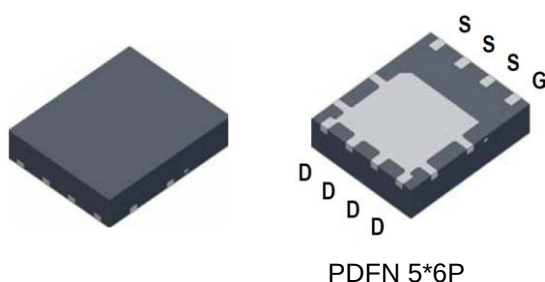


PK512BA

N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D^2
30V	2.8mΩ @ $V_{GS} = 10V$	93A



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	
Continuous Drain Current ²	$T_C = 25\text{ }^{\circ}\text{C}$	I_D	93	A
	$T_C = 100\text{ }^{\circ}\text{C}$		59	
Pulsed Drain Current ¹		I_{DM}	150	
Continuous Drain Current	$T_A = 25\text{ }^{\circ}\text{C}$	I_D	22	
	$T_A = 70\text{ }^{\circ}\text{C}$		17	
Avalanche Current		I_{AS}	49	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	120	mJ
Power Dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	P_D	44	W
	$T_C = 100\text{ }^{\circ}\text{C}$		17	
Power Dissipation	$T_A = 25\text{ }^{\circ}\text{C}$	P_D	2.5	
	$T_A = 70\text{ }^{\circ}\text{C}$		1.6	
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-Case	$R_{\theta JC}$		3	$^{\circ}\text{C} / \text{W}$
Junction-to-Ambient ³	$R_{\theta JA}$		50	

¹Pulse width limited by maximum junction temperature.

²Package limitation current is 52A

³The 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 $T_A=25^{\circ}\text{C}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.5	1.75	2.35	
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
		$V_{DS} = 20V, V_{GS} = 0V, T_J = 55\text{ }^{\circ}C$			10	
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 16A$		2.7	3.6	m Ω
		$V_{GS} = 10V, I_D = 20A$		2.3	2.8	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 5V, I_D = 20A$		112		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$		3170		pF
Output Capacitance	C_{oss}			369		
Reverse Transfer Capacitance	C_{rss}			295		
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$		0.8	1.5	Ω
Total Gate Charge ²	Q_g	$V_{GS}=10V$	$V_{DS} = 15V, I_D = 20A, V_{GS} = 10V$	65		nC
		$V_{GS}=4.5V$		34		
Gate-Source Charge ²	Q_{gs}	9				
Gate-Drain Charge ²	Q_{gd}	13				
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DS} = 15V, I_D \cong 20A, V_{GS}=20V,$ $R_{GEN}= 6\Omega$		29		
Rise Time ²	t_r		13			
Turn-Off Delay Time ²	$t_{d(off)}$		57			
Fall Time ²	t_f		14			
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25\text{ }^{\circ}C$)						
Continuous Current ³	I_S				93	A
Forward Voltage ¹	V_{SD}	$I_F = 20A, V_{GS} = 0V$			1	V
Reverse Recovery Time	t_{rr}	$I_F = 20\text{ A}, dI_F/dt = 100A/\mu S$		28		nS
Reverse Recovery Charge	Q_{rr}			17		nC

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

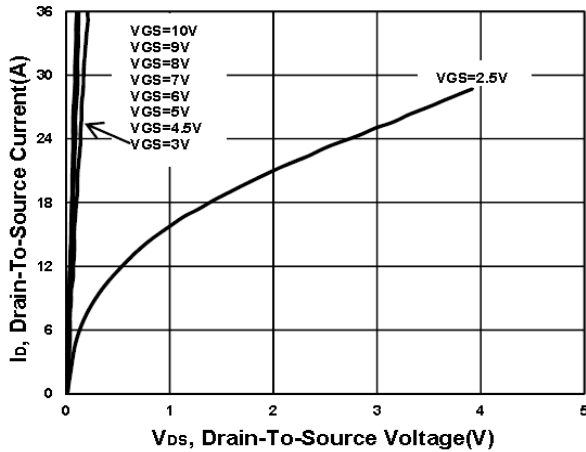
²Independent of operating temperature.

³Package limitation current is 52A

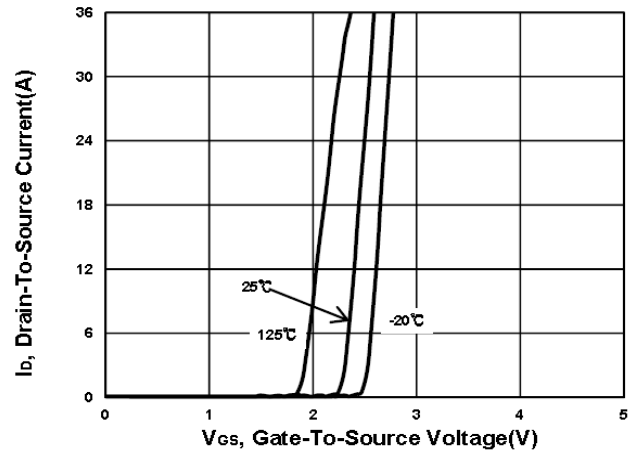
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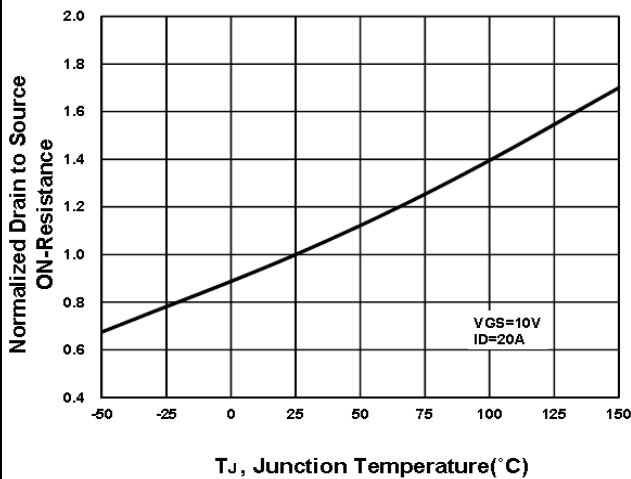
Output Characteristics



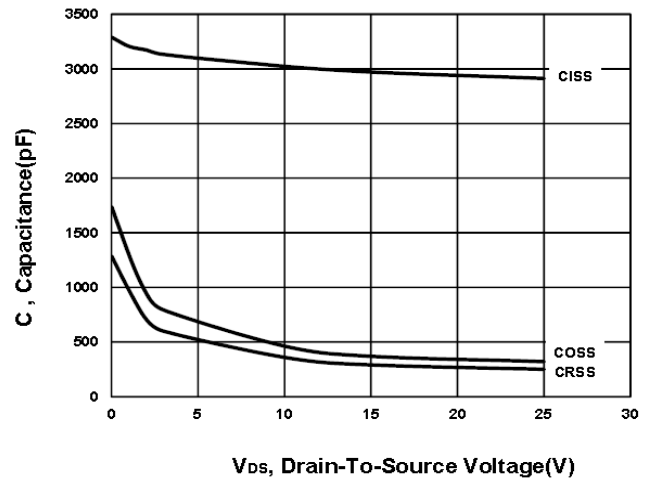
Transfer Characteristics



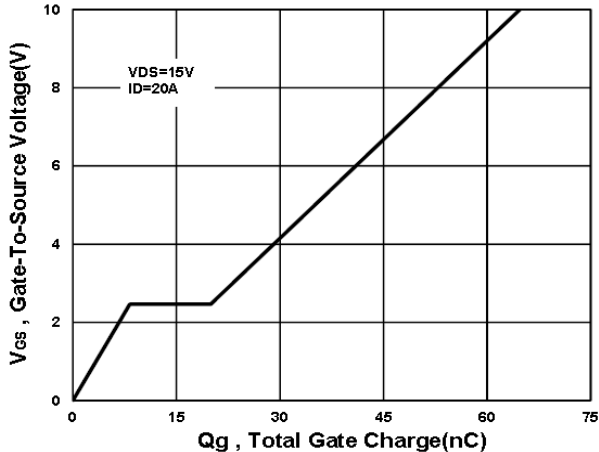
On-Resistance VS Temperature



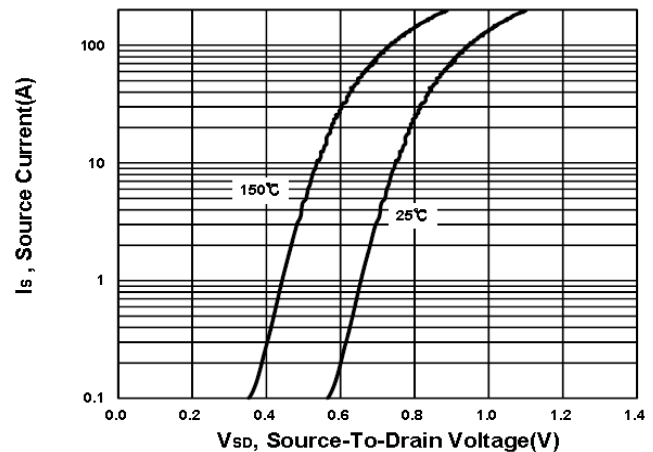
Capacitance Characteristic



Gate charge Characteristics



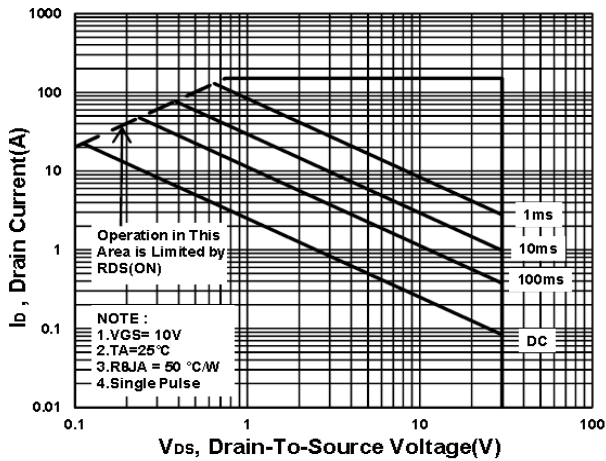
Source-Drain Diode Forward Voltage



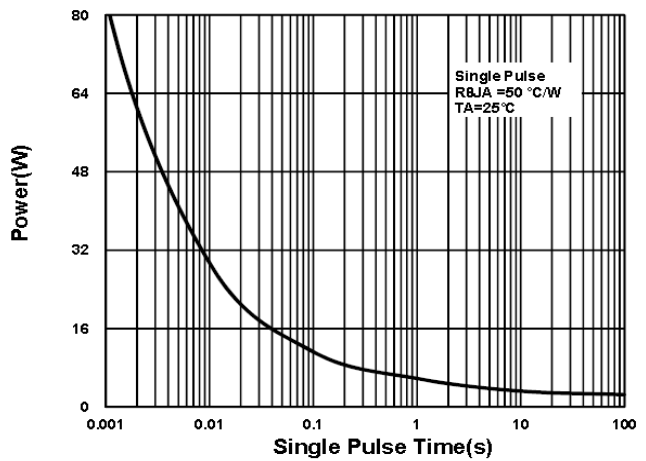
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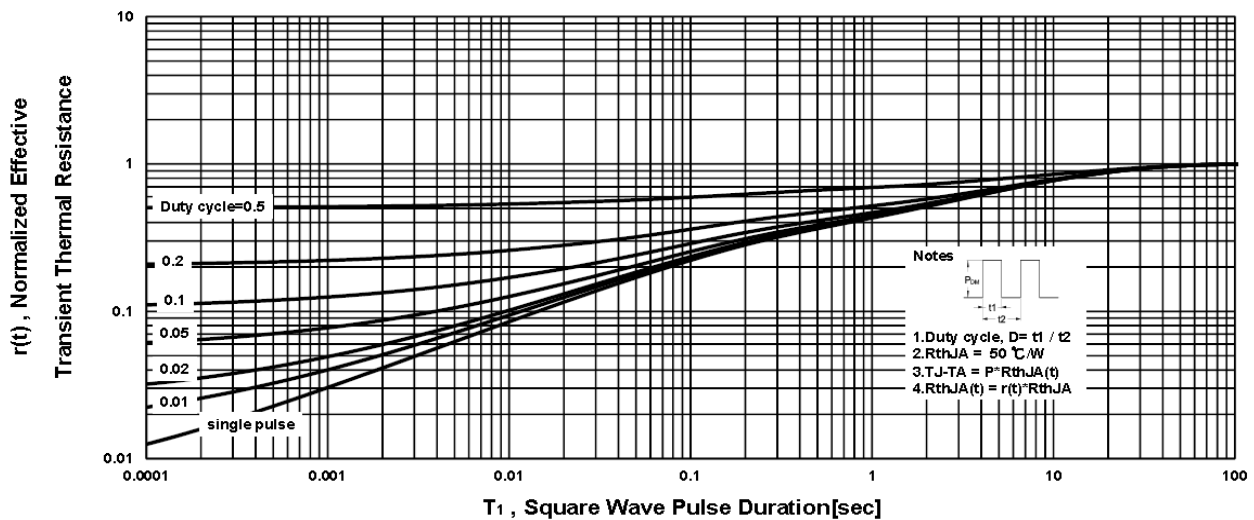
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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Package Dimension

PDFN 5x6P MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.8		5.15	J	3.33		3.78
B	5.44		5.9	K	0.9		
C	5.9		6.35	L	0.35		0.712
D	0.33		0.51	M	0°		12°
E		1.27		N	4.8		5.5
F	0.8		1.25	O	0.05		0.3
G	0.15		0.34	P	0.06		0.2
H	3.61		4.31	S	3.69		4.19
I	0.35		0.71				

