PAC2019S

N-Ch and P-Ch Fast Switching MOSFET

V_{DS}=20V, I_D=4.5A, $R_{DS(ON)}$=38mΩ

V_{DS}=-20V, I_D=-4.5A, $R_{DS(ON)}$=80mΩ

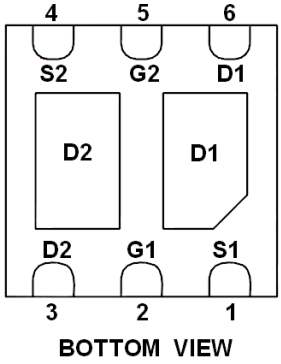
➢ General Description

This PAC2019S N&P Channel enhancement mode power field effect transistor is the high density trench technology and this advanced technology can provide excellent Rds(On) performance and efficiency for power switching and load switching application., this device also comply with the RoHS and Green Product requirement with full function reliability approved.

➢ Feature

- ●Super high density cell design for extremely low RDS (ON)
- ●Exceptional on-resistance and maximum DC current capability
- ●DFN2X2-6L package design

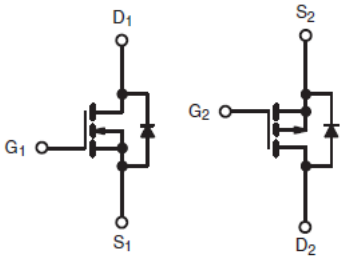
➢ DFN2X2-6L



BOTTOM VIEW

➢ Application

- ●Power Management in Note book
- ●Portable Equipment
- ●Battery Powered System
- ●DC/DC Converter
- ●Load Switch
- ●DSC
- ●LCD Display inverte



N-Channel P-Channel

➢ Absolute Maximum Ratings

Parameter		Symbol	Rating		Unit
			N-Channel	P-Channel	
Drain-Source Voltage		V_{DSS}	20	-20	V
Gate –Source Voltage		V_{GSS}	±12	±12	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	4.5	-4.5	A
	T_A=70℃		2.4	-2.4	
Pulsed Drain Current		I_{DM}	15	-15	A
Continuous Source Current(Diode Conduction)		I_S	1.5	-1.5	A
Power Dissipation	T_A=25℃	P_D	1.9		W
	T_A=70℃		1.2		
Operating Junction Temperature		T_J	150		℃
Storage Temperature Range		T_{STG}	-55/150		℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	65		℃/W

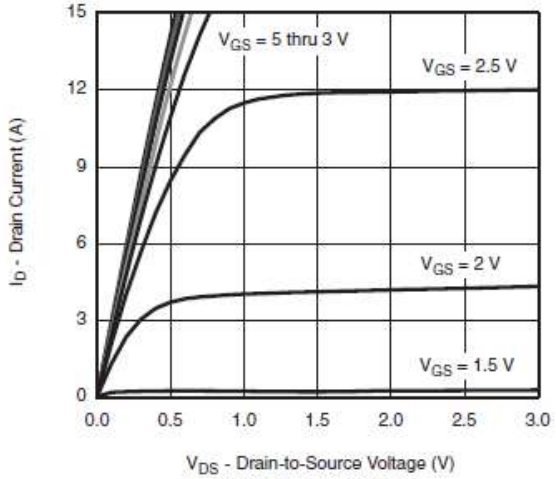
➢ N-Channel Electrical Characteristics (T_A=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	0.3		0.8	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±12V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=16V,V_{GS}=0V			1	uA
		V_{DS}=16V,V_{GS}=0V T_J=85℃			10	
On-State Drain Current	$I_{D(on)}$	V_{DS}≧5V,V_{GS}=4.5V	6			A
		V_{DS}≧5V,V_{GS}=2.5V	4			
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=4.5V,I_D=4.5A		28	38	mΩ
		V_{GS}=2.5V,I_D=3.6A		35	48	
		V_{GS}=1.8V,I_D=2.4A		50	68	
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=3.6A		10		S
Diode Forward Voltage	V_{SD}	I_S=1.6A,V_{GS}=0V		0.85	1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=10V,V_{GS}=4.5V I_D≡3.6A		4.2	5.0	nC
Gate-Source Charge	Q_{gs}			0.6		
Gate-Drain Charge	Q_{gd}			0.4		
Input Capacitance	C_{iss}	V_{DS}=10V,V_{GS}=0V f=1MHz		340		pF
Output Capacitance	C_{oss}			115		
Reverse Transfer Capacitance	C_{rss}			33		
Turn-On Time	$t_{d(on)}$	V_{DD}=10V,R_L=2.8Ω I_D≡3.6A,V_{GEN}=4.5V R_G=1Ω		8	15	ns
	t_r			8	15	
Turn-Off Time	$t_{d(off)}$			25	40	
	t_f			8	15	

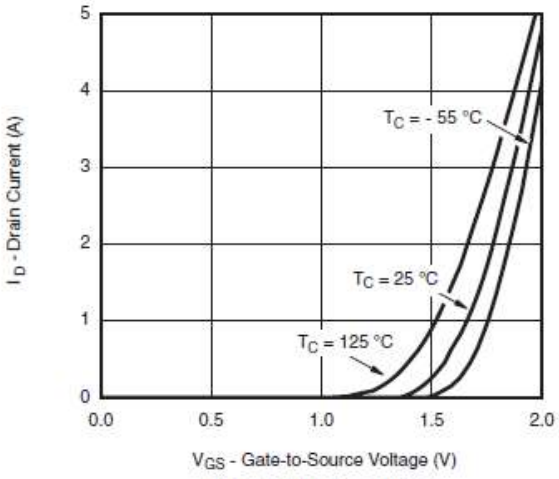
➢ P-Channel Electrical Characteristics (T_A=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=-250uA	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250uA	-0.3		-0.8	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±12V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-16V,V_{GS}=0V			-1	uA
		V_{DS}=-16V,V_{GS}=0V T_J=85℃			-30	
On-State Drain Current	$I_{D(on)}$	V_{DS}≦-5V,V_{GS}=-4.5V	-8			A
		V_{DS}≦-5V,V_{GS}=-2.5V	-3			
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-4.5V,I_D=-4.5A		60	80	mΩ
		V_{GS}=-2.5V,I_D=-3.8A		80	105	
		V_{GS}=-1.8V,I_D=-2.5A		115	145	
Forward Transconductance	g_{FS}	V_{DS}=-5V,I_D=-2.8A		6.5		S
Diode Forward Voltage	V_{SD}	I_S=-1.25A,V_{GS}=0V		-0.75	-1.3	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-10V,V_{GS}=-4.5V I_D≡-3.5A		5	10	nC
Gate-Source Charge	Q_{gs}			0.85		
Gate-Drain Charge	Q_{gd}			1.5		
Input Capacitance	C_{iss}	V_{DS}=-10V,V_{GS}=0V f=1MHz		375		pF
Output Capacitance	C_{oss}			80		
Reverse Transfer Capacitance	C_{rss}			60		
Turn-On Time	$t_{d(on)}$	V_{DD}=-10V,R_L=2.85Ω I_D≡-3.5A,V_{GEN}=-4.5V R_G=1Ω		15	25	ns
	t_r			36	60	
Turn-Off Time	$t_{d(off)}$			25	50	
	t_f			15	25	

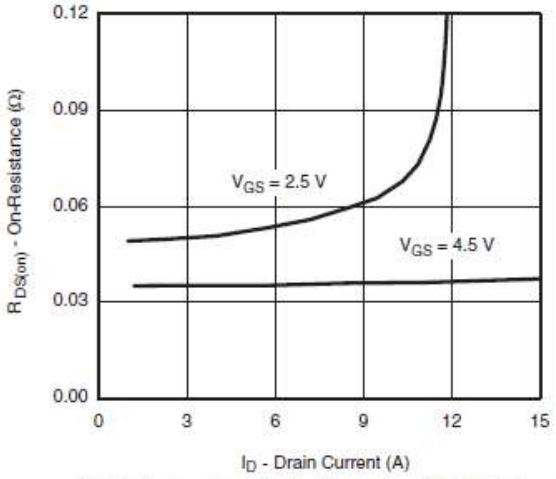
➢ N-Channel Typical Characteristics



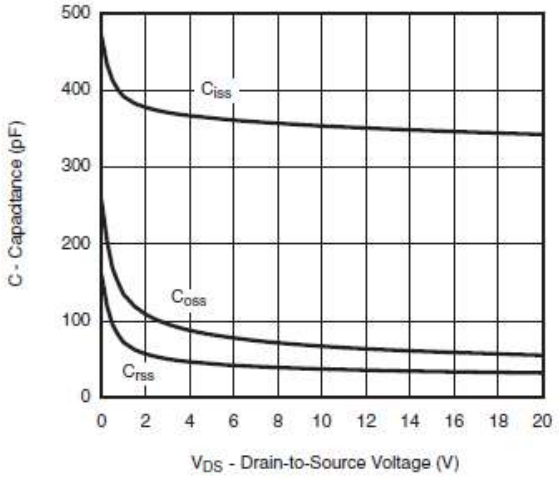
Output Characteristics



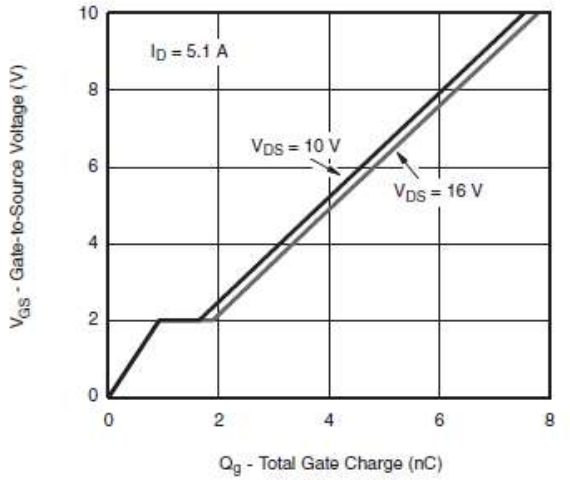
Transfer Characteristics



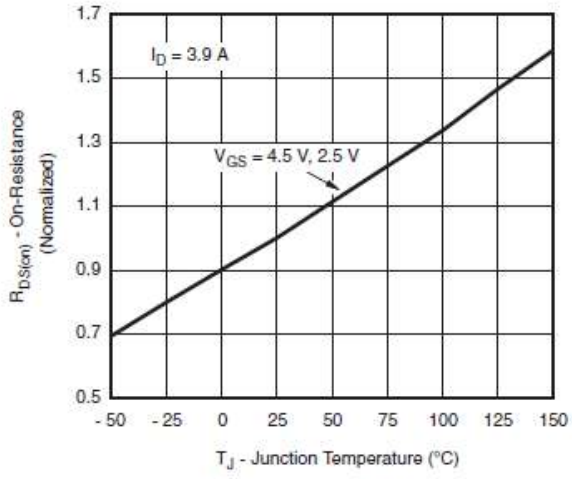
On-Resistance vs. Drain Current and Gate Voltage



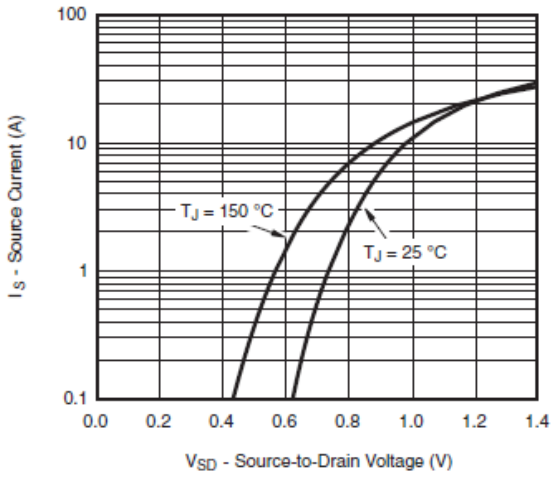
Capacitance



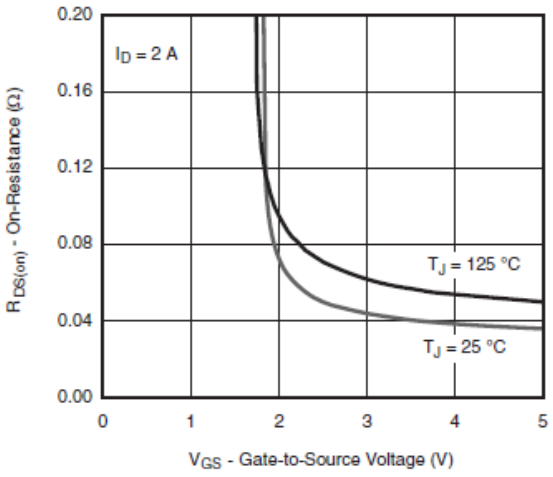
Gate Charge



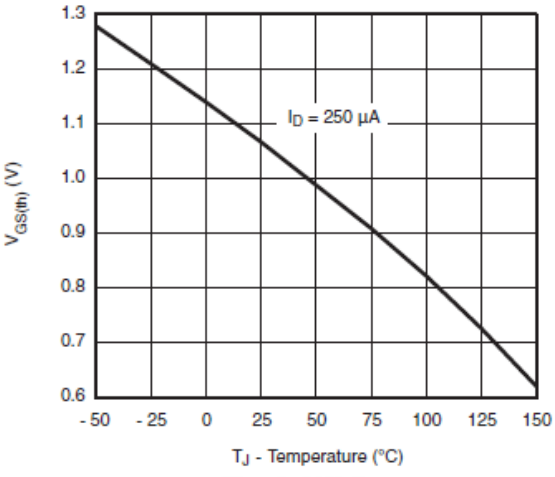
On-Resistance vs. Junction Temperature



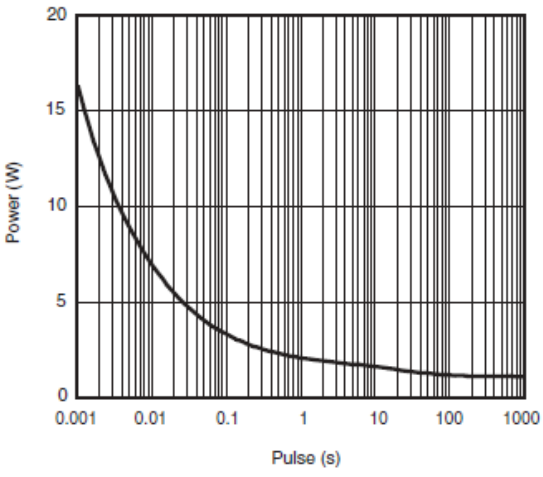
Source-Drain Diode Forward Voltage



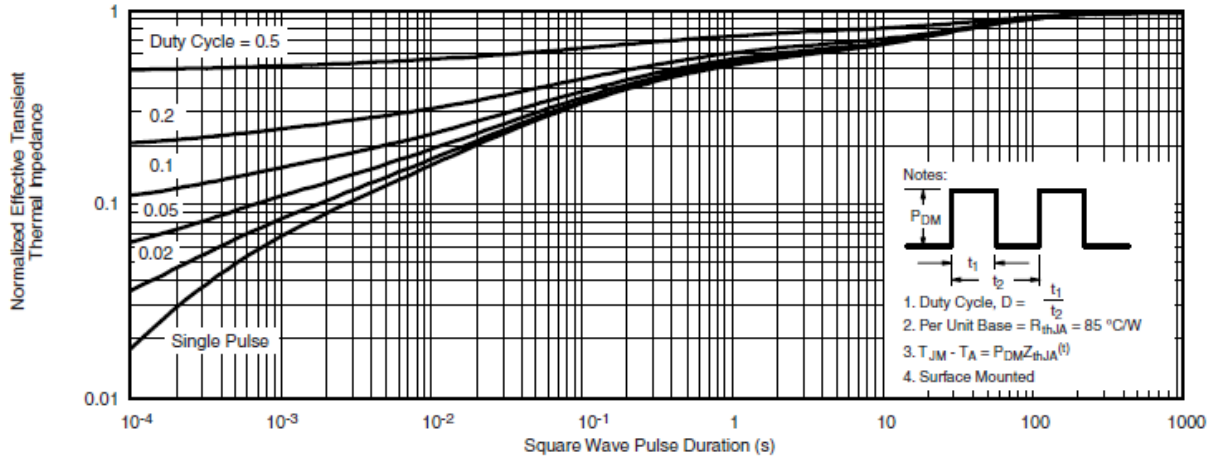
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

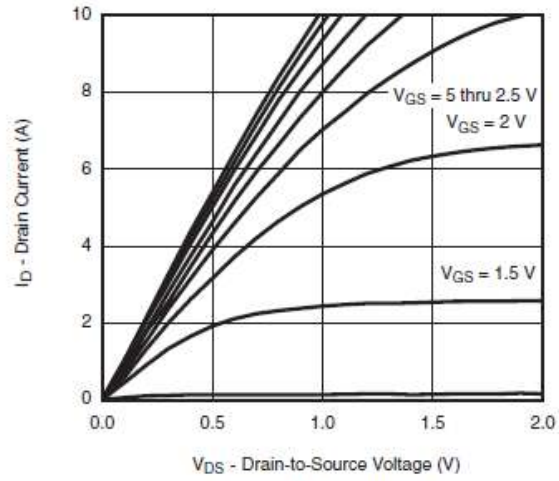


Single Pulse Power (Junction-to-Ambient)

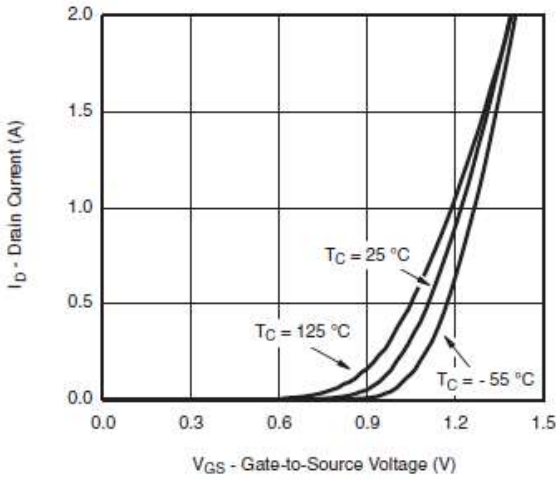


Normalized Thermal Transient Impedance, Junction-to-Ambient

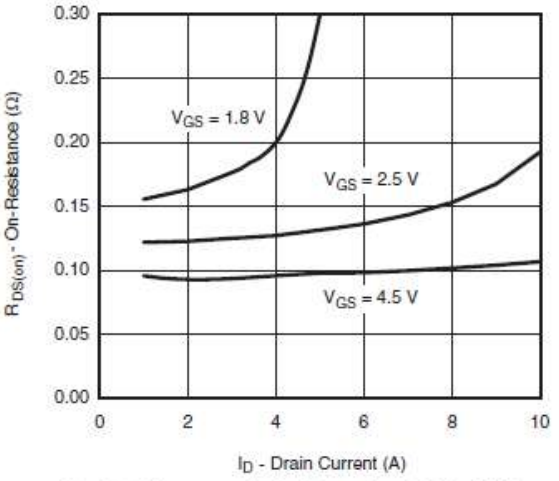
➢ P-Channel Typical Characteristics



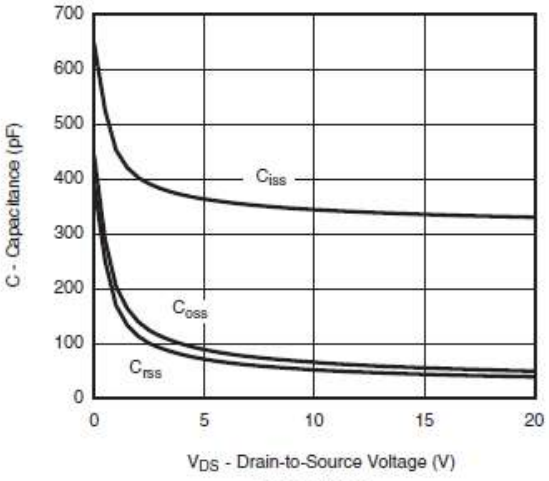
Output Characteristics



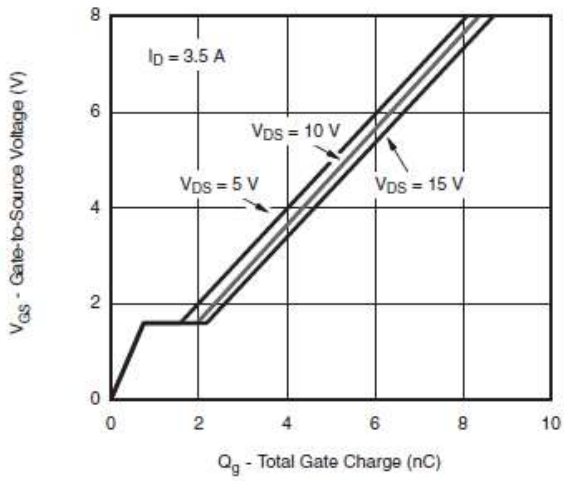
Transfer Characteristics



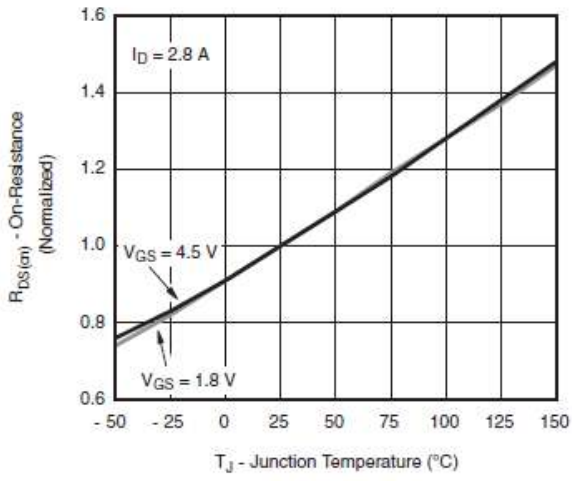
On-Resistance vs. Drain Current and Gate Voltage



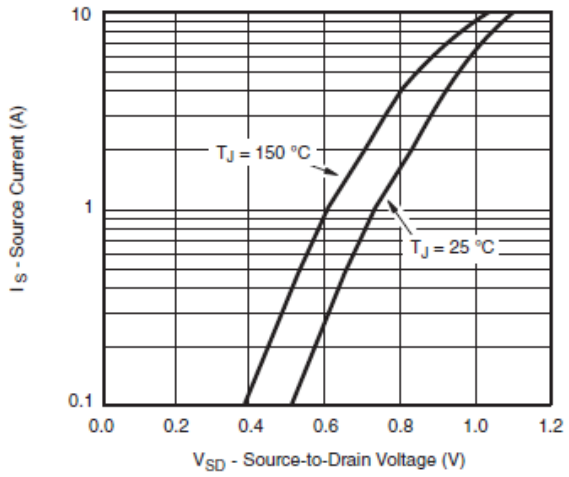
Capacitance



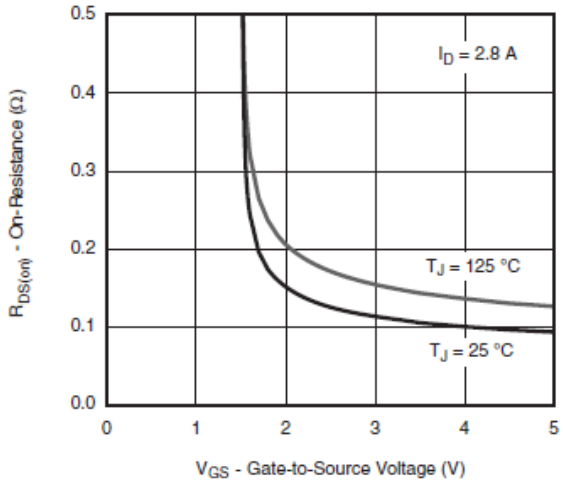
Gate Charge



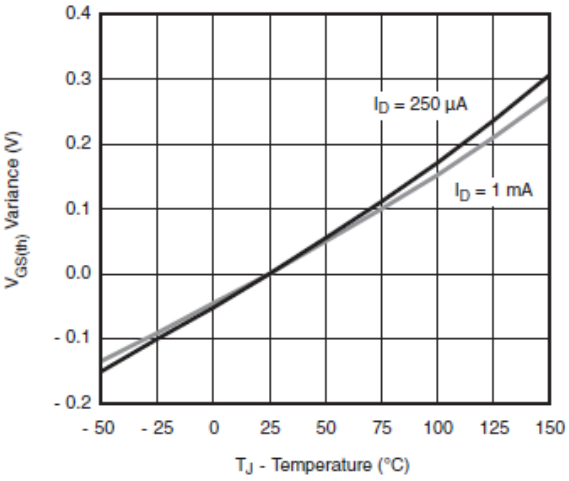
On-Resistance vs. Junction Temperature



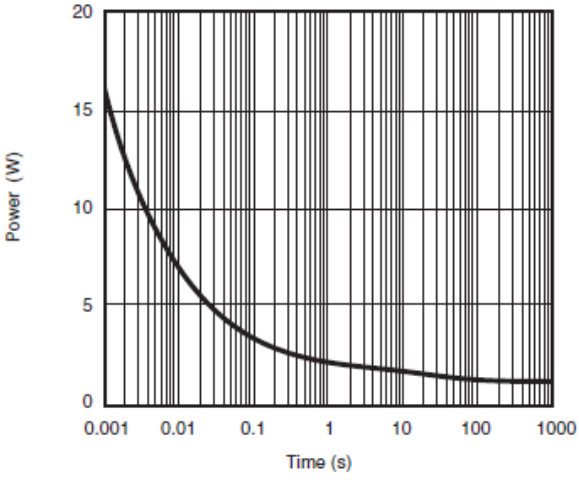
Soure-Drain Diode Forward Voltage



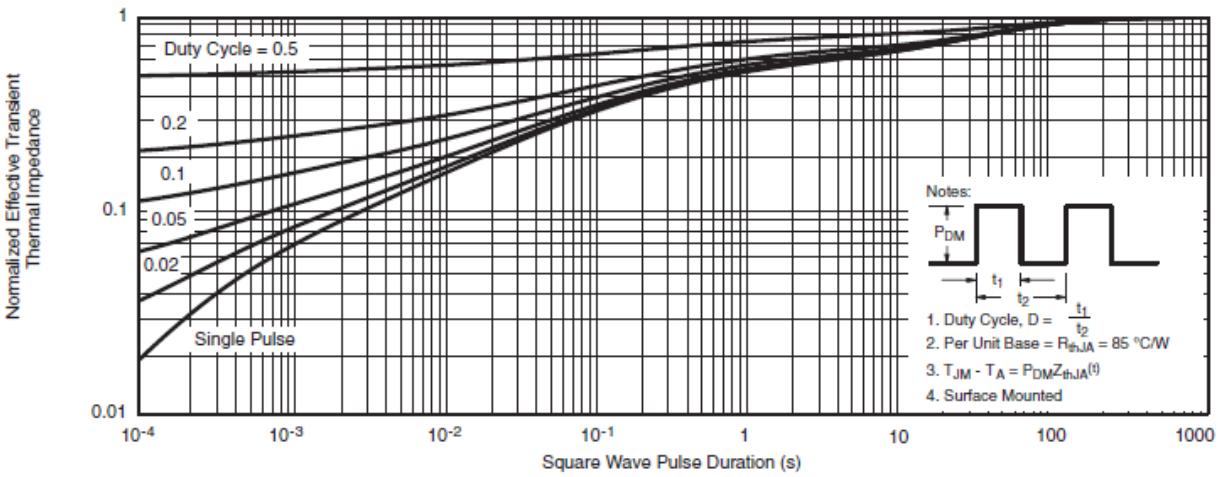
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

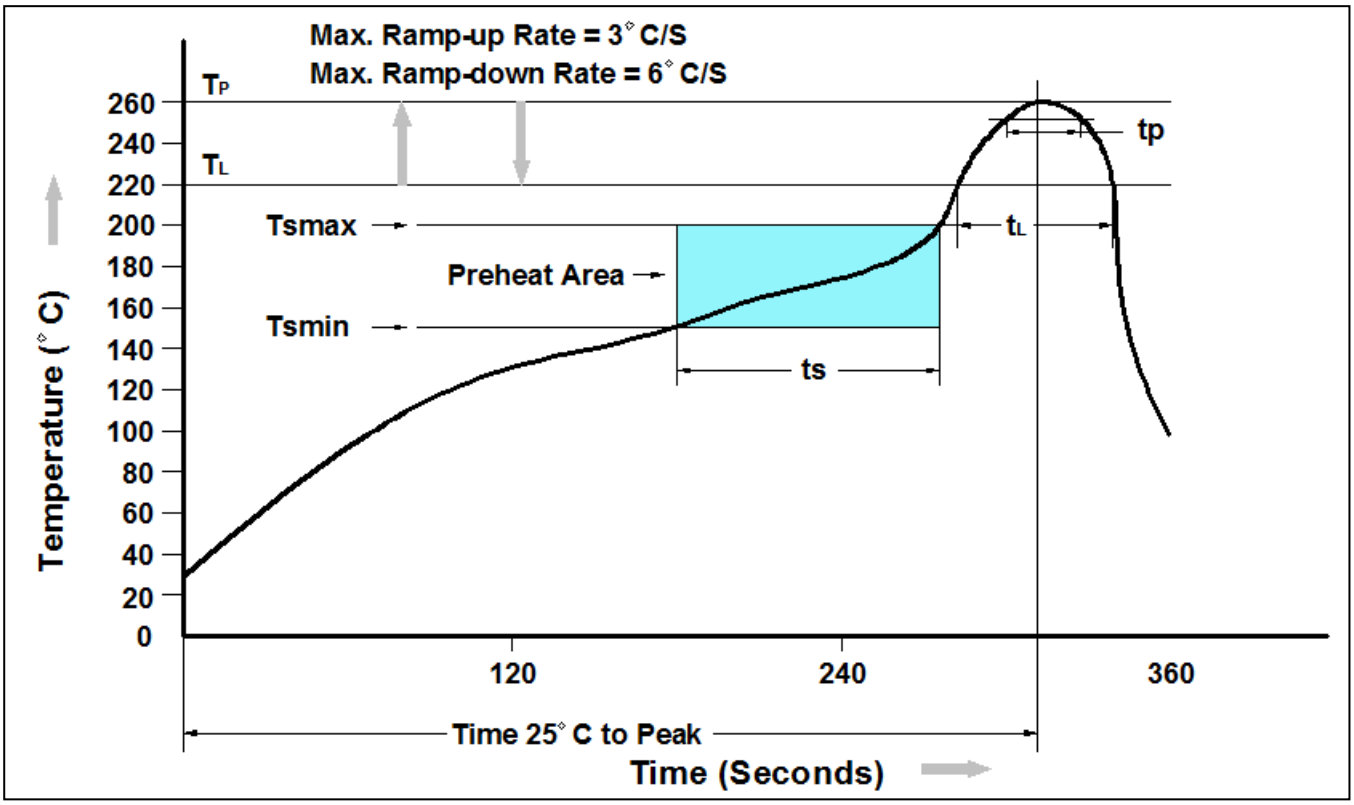


Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

➢ Recommand IR Reflow Soldering Thermal Profile

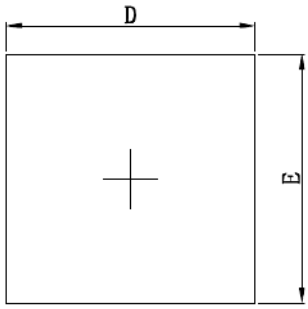


Profile Feature	Pb-Free Assembly Profile
Temperature Min. (Tsmin)	150°C
Temperature Max. (Tsmax)	200°C
Time (ts) from (Tsmin to Tsmax)	60-120 seconds
Average Ramp-up Rate (tL to tP)	3°C/second max.
Liquidous Temperature (TL)	217°C
Time (tL) Maintained Above (TL)	60 – 150 seconds
Peak Temperature	260°C +0°C / -5°C
Time (tP) within 5°C of actual Peak Temperature	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.

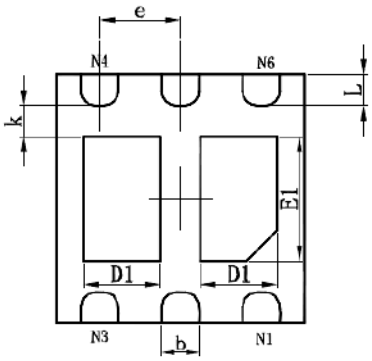
➢ Ordering Information

Part Number	Description	Quantity
PAC2019S	DFN2X2-6L Reel	4000 pcs

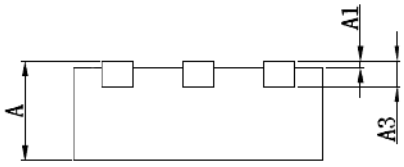
➢ Package Information (DFN2X2-6L)



Top View



Bottom View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700/0.800	0.800/0.900	0.028/0.031	0.031/0.035
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	1.924	2.076	0.076	0.082
E	1.924	2.076	0.076	0.082
D1	0.520	0.720	0.020	0.028
E1	0.900	1.100	0.035	0.043
k	0.200MIN.		0.008MIN.	
b	0.250	0.350	0.010	0.014
e	0.650TYP.		0.026TYP.	
L	0.174	0.326	0.007	0.013

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