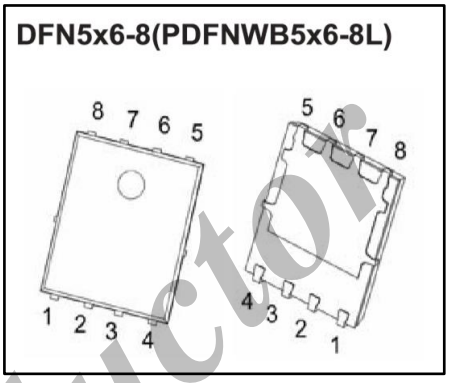
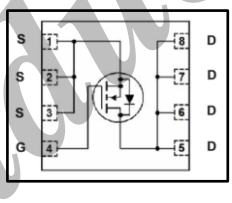
APN5C430NLT3G
40V N-Channel Enhancement Mode MOSFET

- **General Description**

APN5C430NLT3G uses advanced MOSFET technology that is uniquely optimized to provide the most efficient high frequency switching performance. Both conduction and switching power losses are minimized due to an extremely low combination of $R_{DS(ON)}$, C_{iss} and C_{oss}.





RoHS COMPLIANT

- **Applications**

- DC/DC Converters in Computing, Servers, and POL
- Isolated DC/DC Converters in Telecom and Industrial

- **Product Summary**

V_{DS}	40V
I_D (at V_{GS} = 10V)	200A
$R_{DS(ON)}$ (at V_{GS} = 10V)	< 1.4mΩ

- **Absolute Maximum Ratings (T_C= 25°C unless otherwise noted)**

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	Tc = 25°C	I_D	200	A
	Tc = 100°C		130	
Pulsed Drain Current (** Note 1)		I_{DM}	800	
Avalanche Current (** Note 2)		I_{AS}	30	A
Avalanche Energy (** Note 2)		E_{AS}	450	mJ
Power Dissipation		P_D	92.6	W
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C
Thermal Characteristics				
Thermal Resistance. Junction-to-Ambient		$R_{\theta JA}$	62	°C/W
Thermal Resistance. Junction-to-Case		$R_{\theta JC}$	1.35	

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Note 1: Repetitive Rating: Pulse width limited by maximum junction temperature

Note 2: E_{AS} conditions: T_J=25°C, V_{DD}=25V, V_G=10V, L=1mH, I_{AS}=30A

- **Electrical Characteristics T_C = 25°C unless otherwise noted**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Parameters						
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V, V_{GS}=0V			1	μA
		V_{DS}=40V, V_{GS}=0V, T_J=125°C			10	
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.0		3.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=50A			1.4	mΩ
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=50A		120		S
Diode Forward Voltage	V_{SD}	I_S=1A, V_{GS}=0V			1	V
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=20V, f=1MHz		7500		pF
Output Capacitance	C_{oss}			230		
Reverse Transfer Capacitance	C_{rss}			3.2		
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz		1.4	2.8	Ω
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=20V, I_D=50A		115		nC
Gate Source Charge	Q_{gs}			24		
Gate Drain Charge	Q_{gd}			19		
Turn-On Delay Time	$t_{D(on)}$	V_{GS}=10V, V_{DS}=20V, I_D=50A, R_{GEN}=3Ω		20		ns
Turn-On Rise Time	t_r			32		
Turn-Off Delay Time	$t_{D(off)}$			98		
Turn-Off Fall Time	t_f			32		
Body Diode Reverse Recovery Time	t_{rr}	I_F=50A, d_i/d_t=100A/μs		64		
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=50A, d_i/d_t=100A/μs		98		nC

- **Ordering Information**

Ordering Part Number	Package	MOQ
APN5C430NLT3G	DFN5x6-8 (PDFNWB5x6-8L)	5,000 pcs / reel

- **Typical Electrical and Thermal Characteristics**

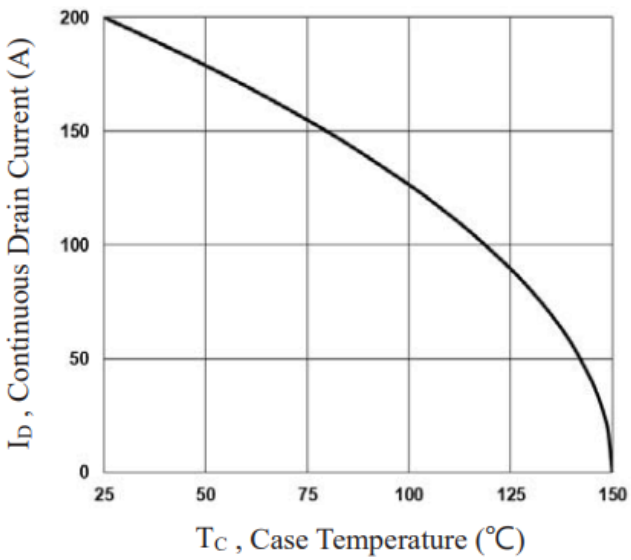

Fig.1 Continuous Drain Current vs. T_C

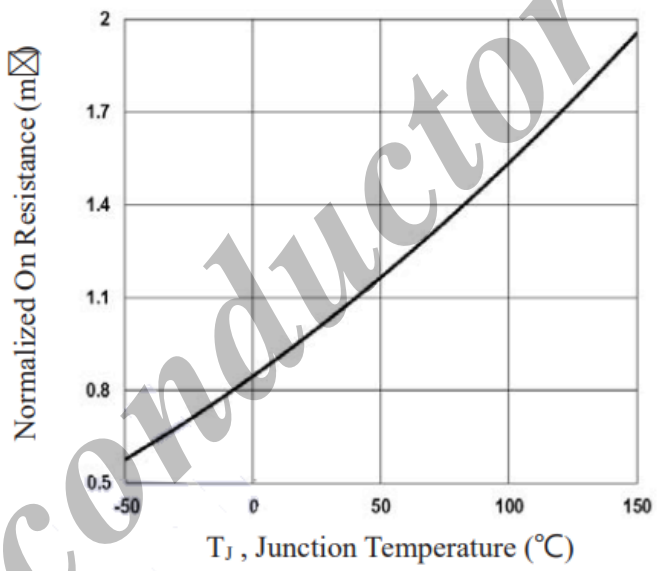

Fig.2 Normalized RDSON vs. T_J

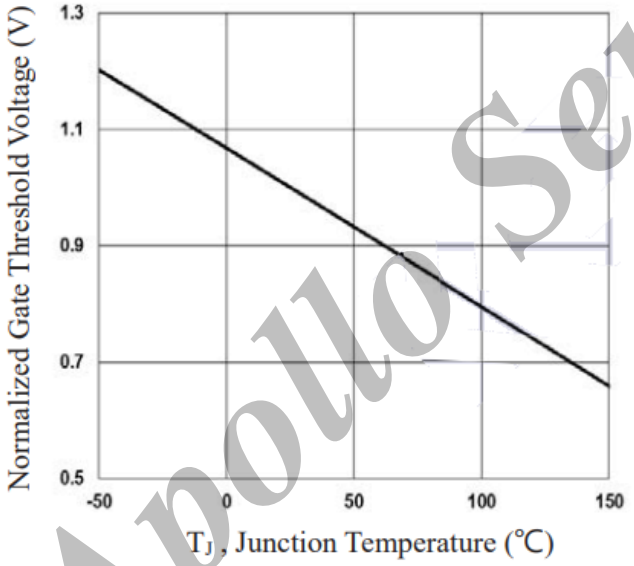

Fig.3 Normalized Vth vs. T_J

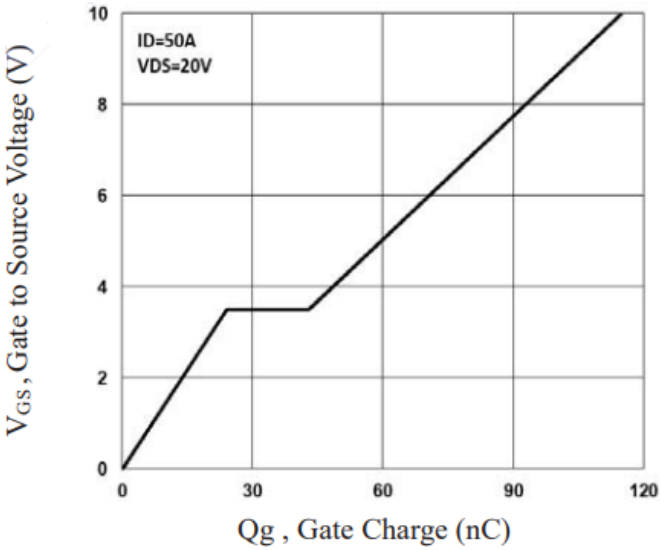

Fig.4 Gate Charge Characteristics

- **Typical Electrical and Thermal Characteristics**

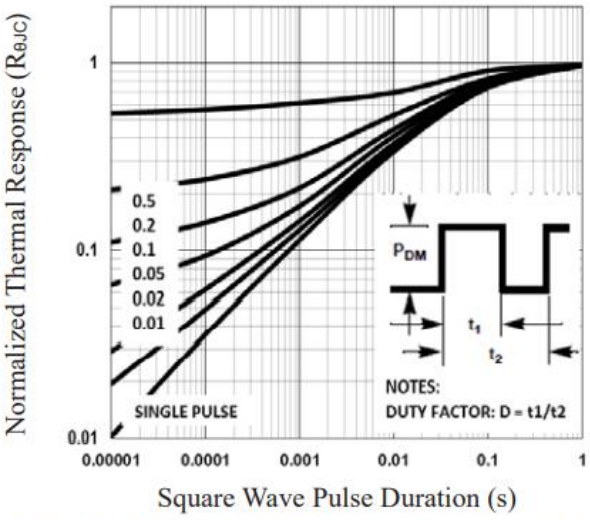

Fig.5 Normalized Transient Impedance

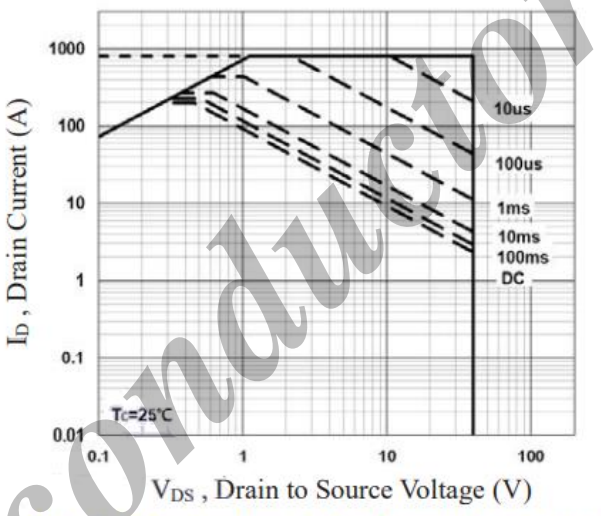

Fig.6 Maximum Safe Operation Area

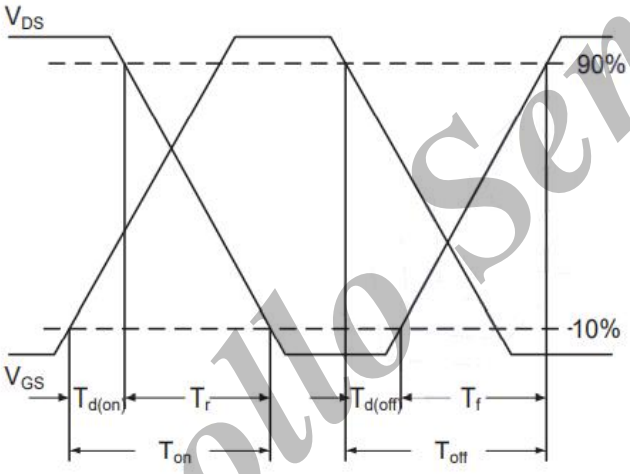

Fig.7 Switching Time Waveform

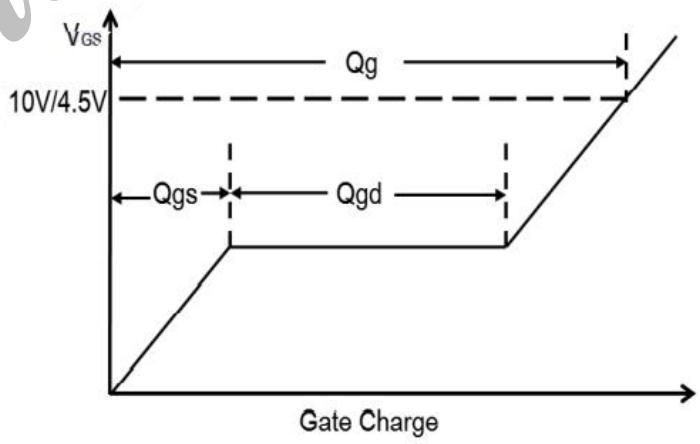

Fig.8 Gate Charge Waveform

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