

• General Description

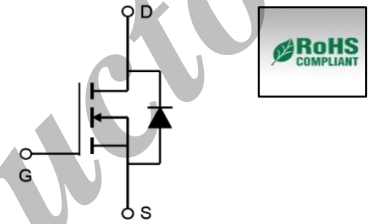
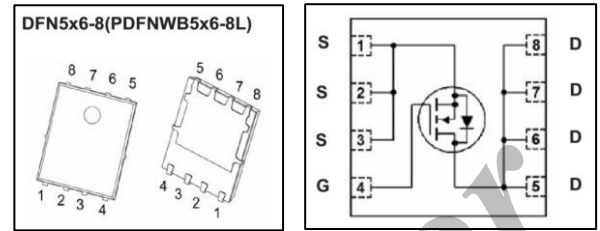
APN6014LT3G combines advanced MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is most suitable to load-switch or DC/DC conversion applications.

• Applications

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

• Product Summary

V_{DS}	60V
I_D	95A
$R_{DS(ON)}$ (at $V_{GS} = 10V$)	< 2.5m Ω
$R_{DS(ON)}$ (at $V_{GS} = 4.5V$)	< 3.4m Ω



• Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ^A	I_D	$T_a = 25^\circ\text{C}$	95
		$T_a = 70^\circ\text{C}$	60
Pulsed Drain Current ^B	I_{DM}	390	A
Single Pulse Avalanche Energy ^C	E_{AS}	500	mJ
Power Dissipation ^D	P_D	120	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$
Thermal Characteristics			
Thermal Resistance, Junction-to-Ambient ^E	$R_{\theta JA}$	20	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.04	

Notes:

- A. The maximum current rating is package limited.
- B. Repetitive rating; pulse width limited by maximum junction temperature.
- C. $V_{DD}=50\text{V}$, $R_G=25\ \Omega$, $L=0.5\text{mH}$, starting $T_J=25^\circ\text{C}$
- D. P_D is based on maximum junction temperature, using junction-case thermal resistance.
- E. The 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 $T_a=25\ ^\circ\text{C}$.

• **Electrical Characteristics ($T_j = 25^\circ\text{C}$ unless otherwise specified)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V_{DS}	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	60			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60\text{V}, V_{GS}=0\text{V}$			1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$			± 100	nA
On Characteristics						
Gate-to-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1.2	1.8	2.2	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}, I_D=20\text{A}$		2.1	2.5	$\text{m}\Omega$
		$V_{GS}=4.5\text{V}, I_D=15\text{A}$		2.7	3.4	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=100\text{KHz}$		5950		pF
Output Capacitance	C_{oss}			1250		
Reverse Transfer Capacitance	C_{rss}			85		
Switching Characteristics						
Total Gate Charge	Q_g	$V_{GS}=10\text{V}, V_{DS}=50\text{V}, I_D=50\text{A}$		93		nC
Gate Source Charge	Q_{gs}			17		
Gate Drain Charge	Q_{gd}			14		
Turn-On Delay Time	$t_{D(on)}$	$V_{GS}=10\text{V}, V_{DD}=30\text{V}, I_D=25\text{A}, R_{GEN}=2\Omega$		22.5		ns
Turn-On Rise Time	t_r			6.7		
Turn-Off Delay Time	$t_{D(off)}$			80.3		
Turn-Off Fall Time	t_f			26.9		
Drain-Source Diode Characteristics						
Body Diode Reverse Recovery Time	t_{rr}	$I_F=25\text{A}, d_i/d_t=100\text{A}/\mu\text{s}$		68		ns
Body Diode Reverse Recovery Charge	Q_{rr}			73		nC
Diode Forward Voltage	V_{SD}	$V_{GS}=0\text{V}, I_S=20\text{A}$			1.2	V

• **Ordering Information**

Ordering Part Number	Package	MOQ
APN6014LT3G	DFN5x6-8 (PDFNWB5x6-8L)	5,000 pcs / reel

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• Typical Electrical and Thermal Characteristics

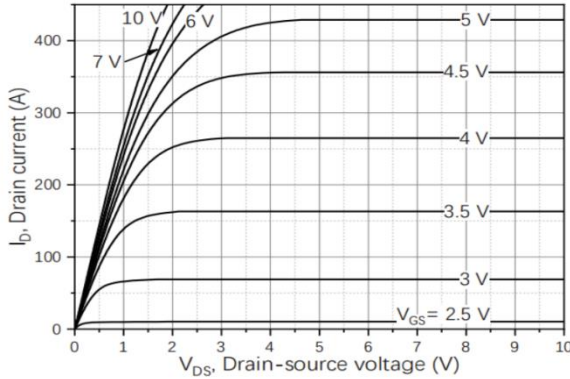


Figure1. Output Characteristics

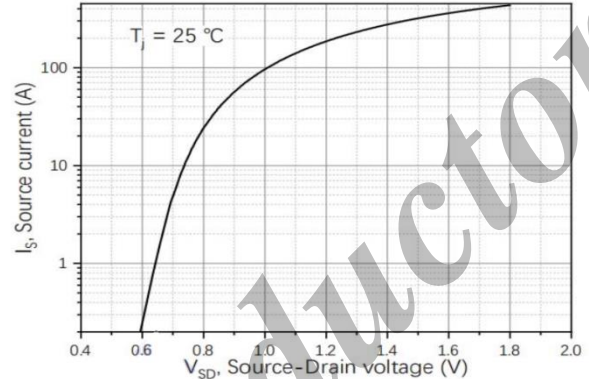


Figure2. Transfer Characteristics

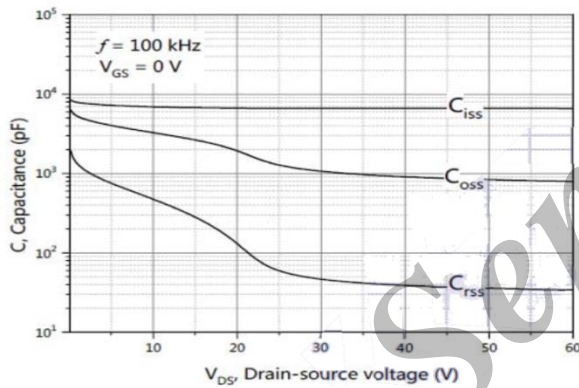


Figure3. Capacitance Characteristics

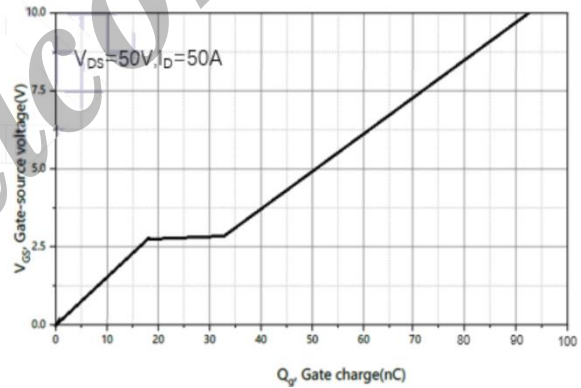


Figure4. Gate Charge

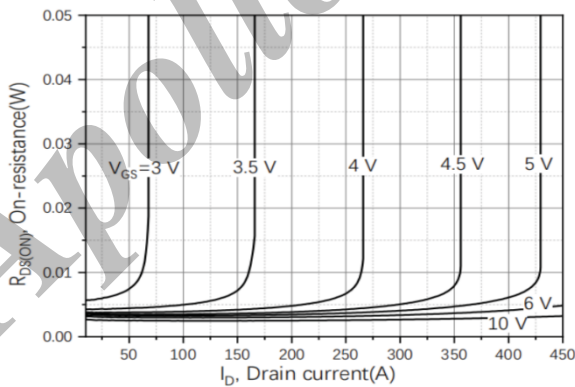


Figure5. Drain-Source on Resistance

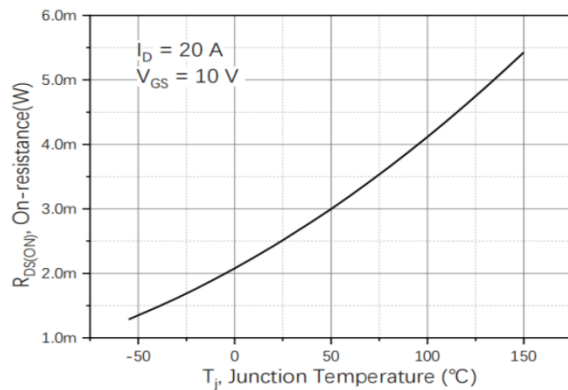


Figure6. Drain-Source on Resistance

• Typical Electrical and Thermal Characteristics

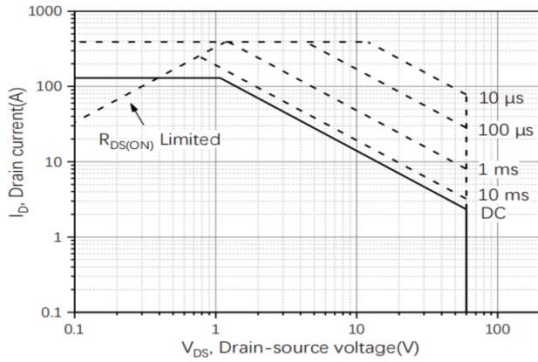


Figure7. Safe Operation Area

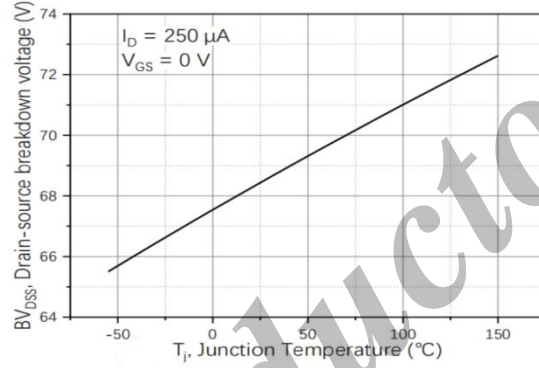
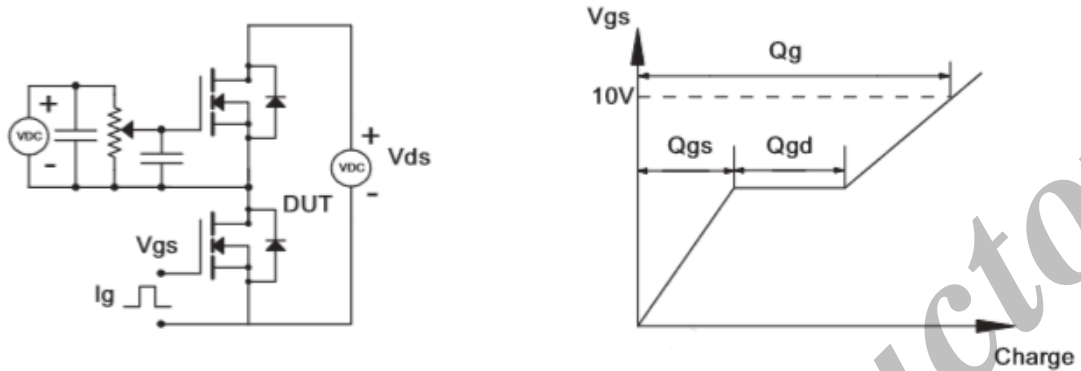
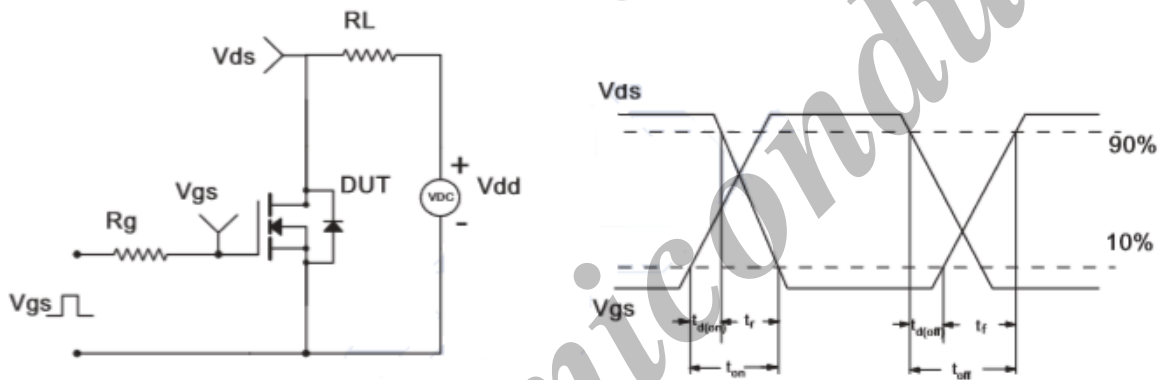


Figure8. Drain-source breakdown voltage

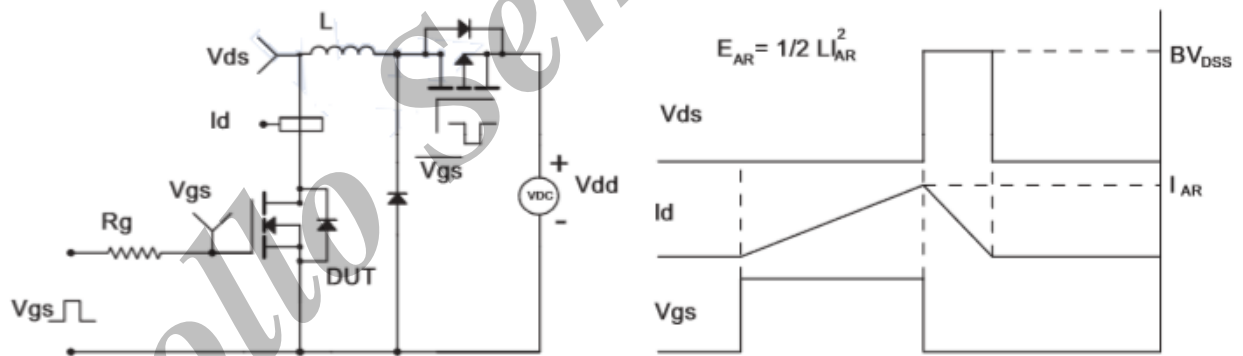
Gate Charge Test Circuit & Waveform



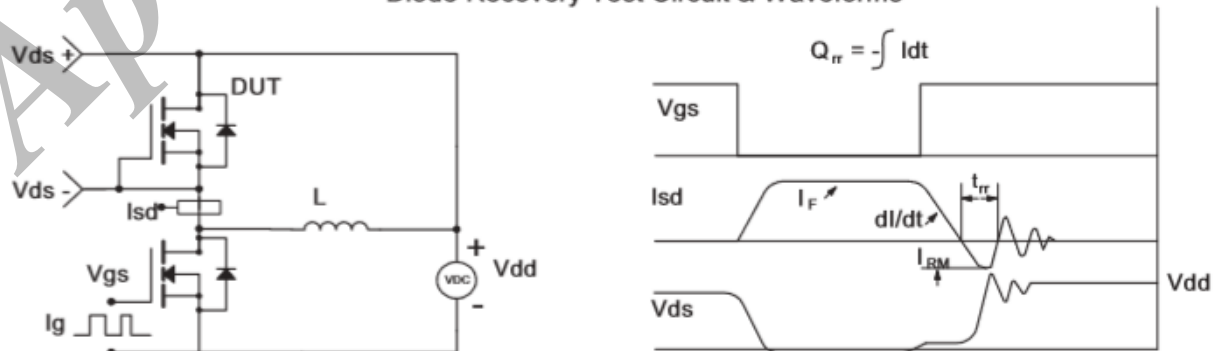
Resistive Switching Test Circuit & Waveforms



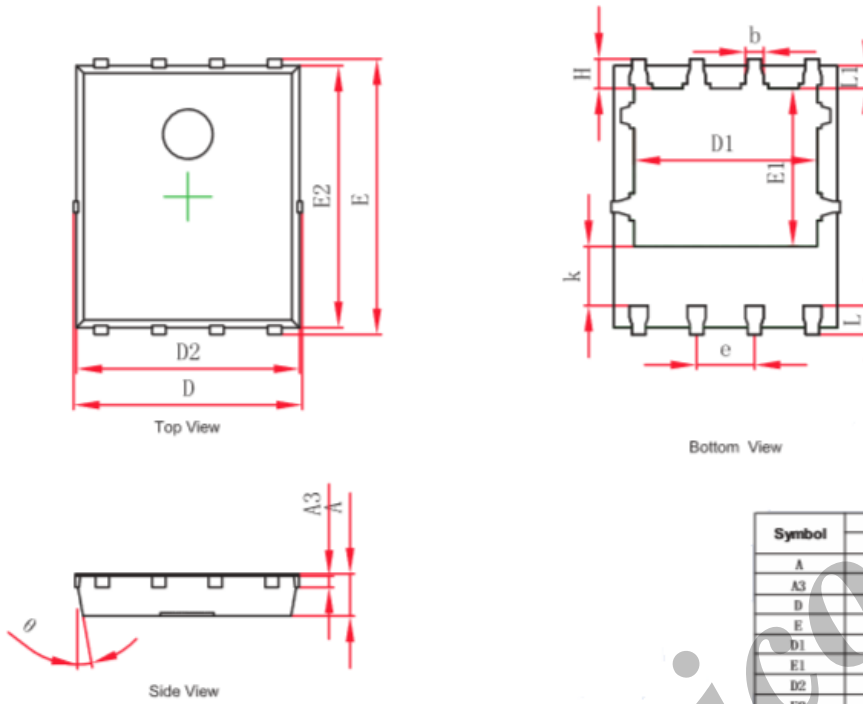
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

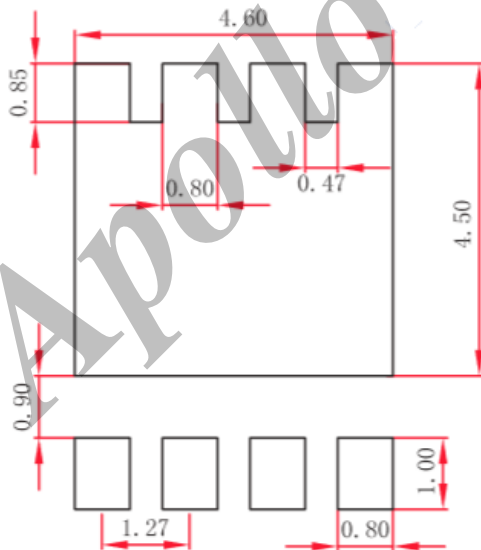


• **DFN5x6-8(PDFNWB5x6-8L) Package Outline Dimensions**



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.300	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
l	0.559	0.711	0.022	0.028
l1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
theta	10°	12°	10°	12°

■ **DFN5x6-8(PDFNWB5x6-8L) Suggested Pad Layout**



Note:
 1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.

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