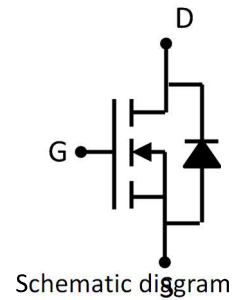


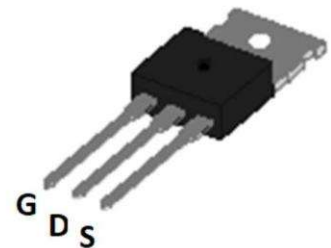
Feature

- 100V,145A
 $R_{DS(ON)} < 4.2m\Omega @ V_{GS}=10V$
- Advanced Trench Power MOSFET
- Provide Excellent $R_{DS(ON)}$ And Low Gate Charge



Application

- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch
- Rectifier



TO-220C

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G042N01	APG042N01	TO-220C		-	1000

ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_a = 25^{\circ}C$)	I_D	145	A
Continuous Drain Current ($T_a = 100^{\circ}C$)	I_D	105	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	380	A
Singel Pulsed Avalanche Energy ⁽²⁾	E_{AS}	660	mJ
Power Dissipation	P_D	215	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.44	$^{\circ}C/W$
Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}C$

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25°C unless otherwise noted)

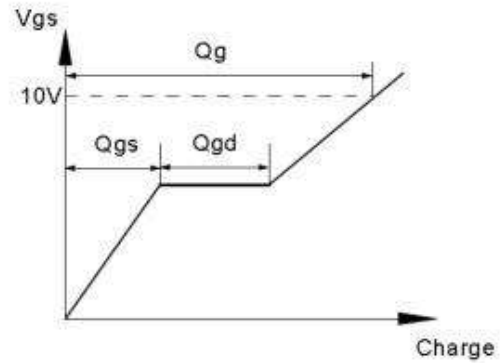
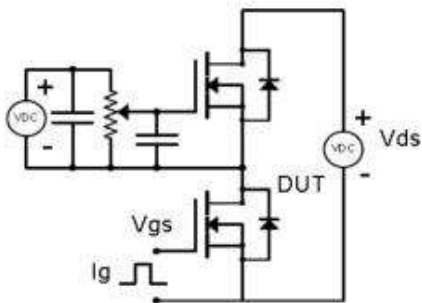
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	100	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =100V, V _{GS} = 0V	-	-	1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0V	-	-	±100	nA
Gate threshold voltage ⁽³⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} =10V, I _D =70A	-	3.7	4.2	mΩ
Forward tranconductance ⁽³⁾	g _{FS}	V _{DS} =10V, I _D =70A	-	122	-	S
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f =1MHz	-	5678	-	pF
Output Capacitance	C _{oss}		-	673	-	
Reverse Transfer Capacitance	C _{rss}		-	27	-	
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} =50V, I _D =70A, V _{GS} =10V, R _G =25Ω	-	25	-	ns
Turn-on rise time	t _r		-	33	-	
Turn-off delay time	t _{d(off)}		-	37	-	
Turn-off fall time	t _f		-	18	-	
Total Gate Charge	Q _g	V _{DS} =50V, I _D =70A, V _{GS} =10V	-	48.5	-	nC
Gate-Source Charge	Q _{gs}		-	2	-	
Gate-Drain Charge	Q _{gd}		-	32	-	
Source-Drain Diode characteristics						
Diode Forward voltage ⁽³⁾	V _{DS}	V _{GS} =0V, I _S =140A	-	-	1.2	V
Diode Forward current ⁽⁴⁾	I _S		-	-	140	A
Reverse recovery time	T _{rr}	I _S =70A, V _{GS} =0V, dI _F /dt=100A/us		71		ns
Reverse recovery charge	Q _{rr}	I _S =70A, V _{GS} =0V, dI _F /dt=100A/us		144		nC

Notes:

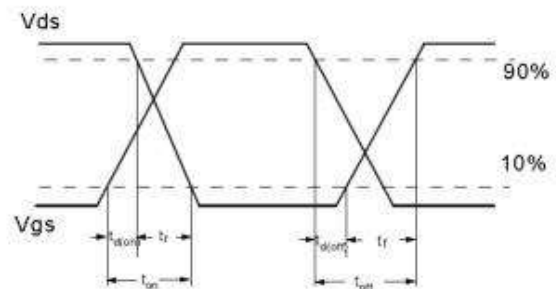
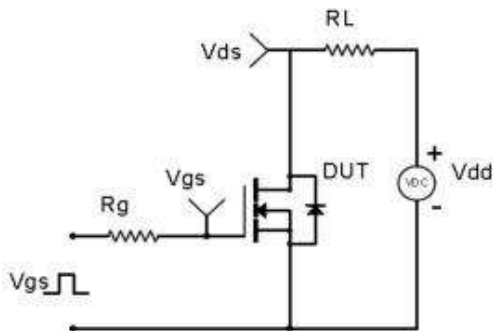
1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition: T_J=25°C, V_{DD}=50V, R_G=20 Ω, L=0.5mH
3. Pulse Test: pulse width≤300μs, duty cycle≤2%
4. Surface Mounted on FR4 Board, t≤10 sec

Test Circuit & Waveform

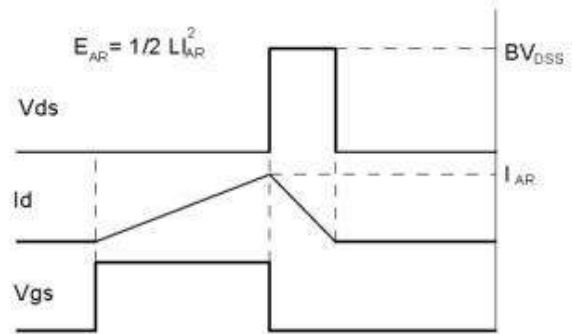
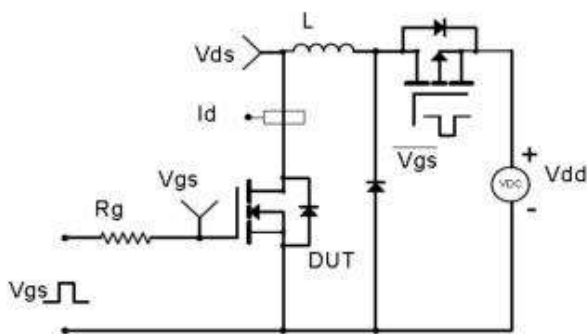
Gate Charge Test Circuit & Waveform



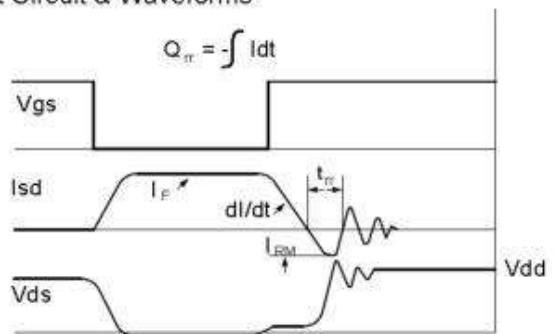
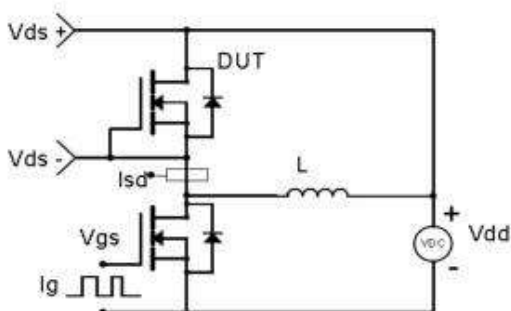
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Electronic and Thermal Characteristics

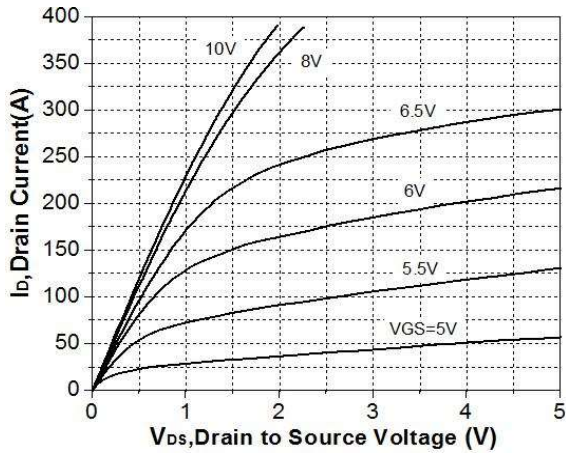


Figure 1. On-Region Characteristics

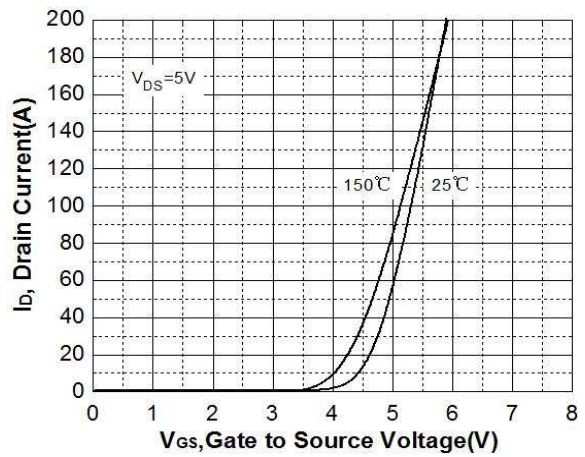


Figure 2. Transfer Characteristics

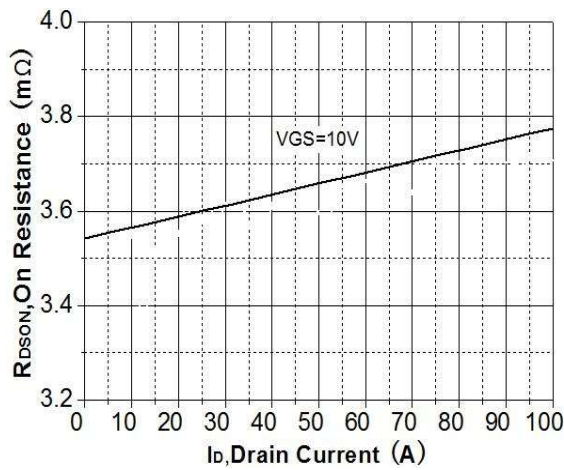


Figure 3. On-Resistance Variation vs Drain Current

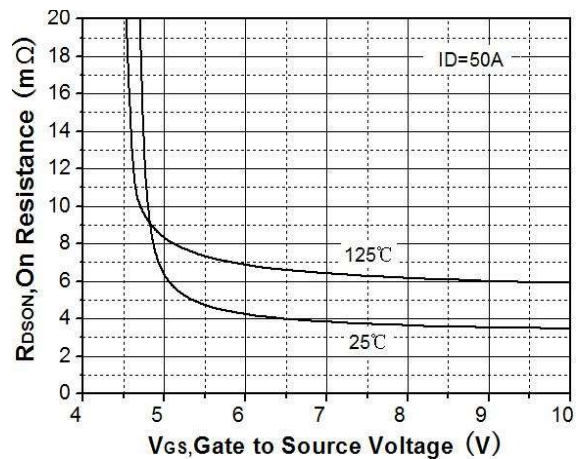


Figure 4. On-Resistance Vs Gate to Source Voltage

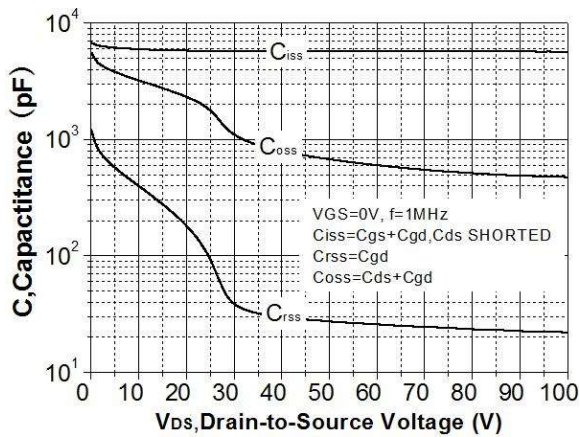


Figure 5. Capacitance Characteristics

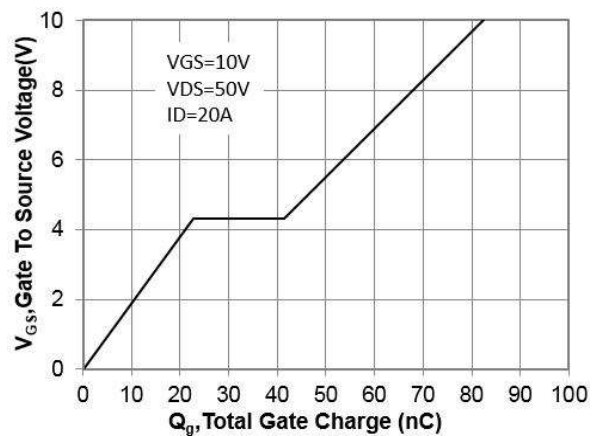


Figure 6. Gate Charge Characteristics

Typical Electronic and Thermal Characteristics

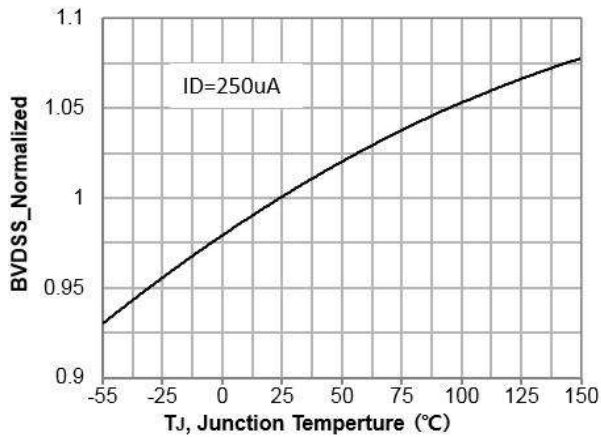


Figure 7. Breakdown Voltage Variation vs Temperature

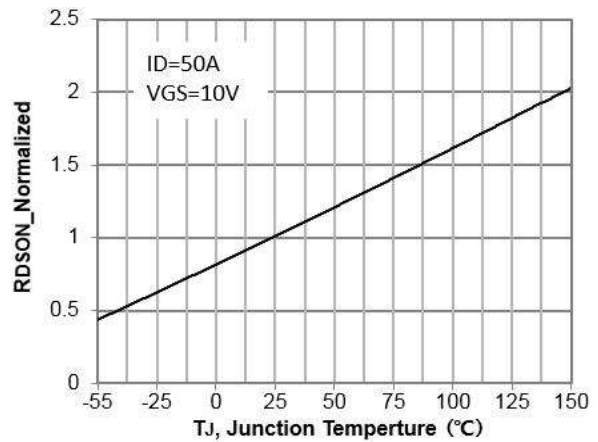


Figure 8. On-Resistance Variation vs Temperature

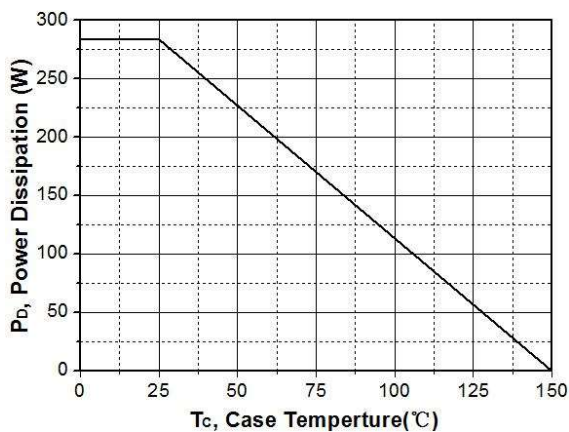


Figure 9. Power Dissipation

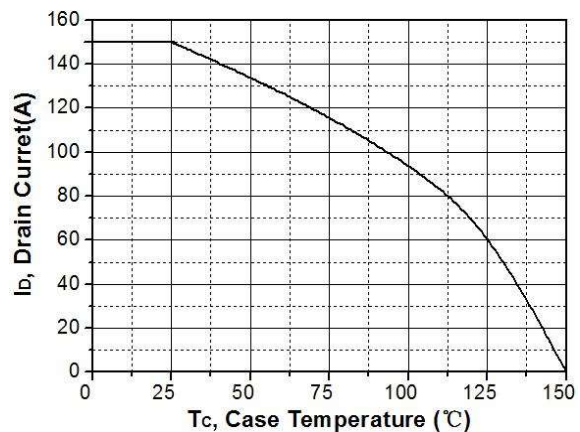


Figure 10. Drain Current Derating

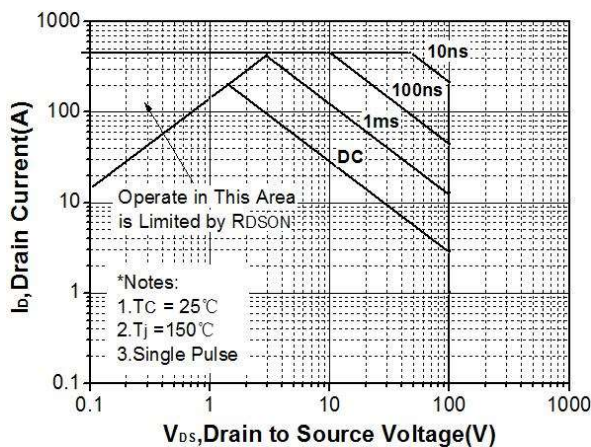


Figure 11. Maximum Safe Operating Area

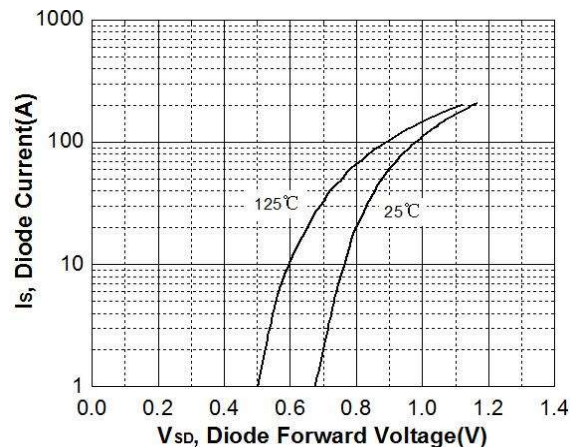
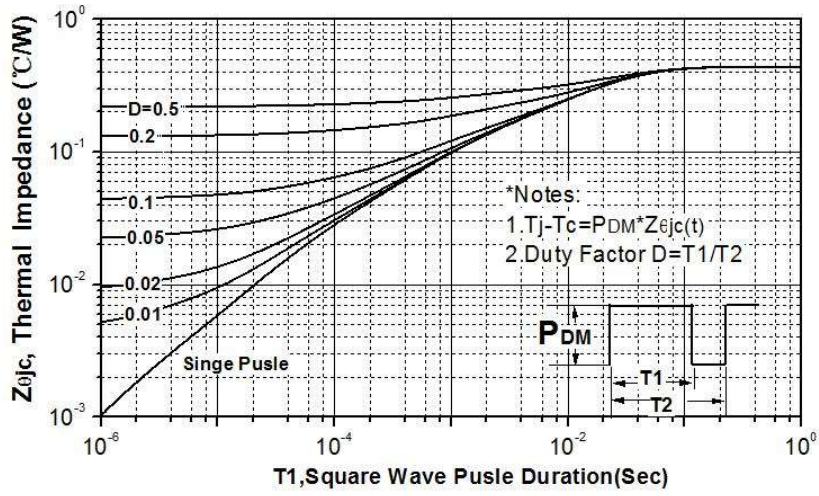


Figure 12. Body-diode Forward Characteristics

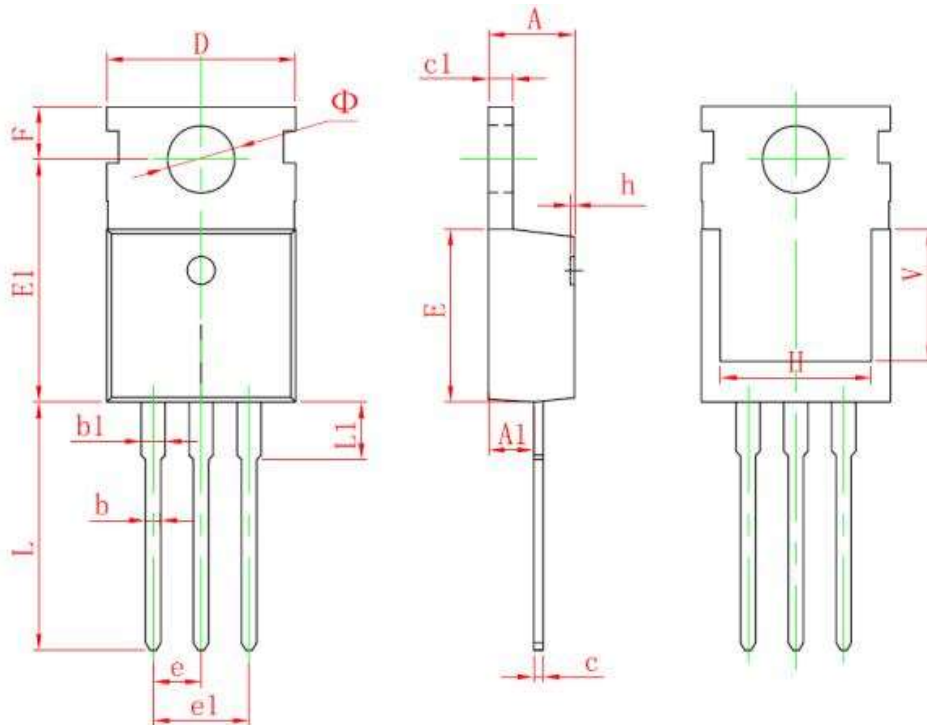
Typical Electronic and Thermal Characteristics



APG042N01

N-Channel Shielding-Gate Mosfet

TO220C Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150