

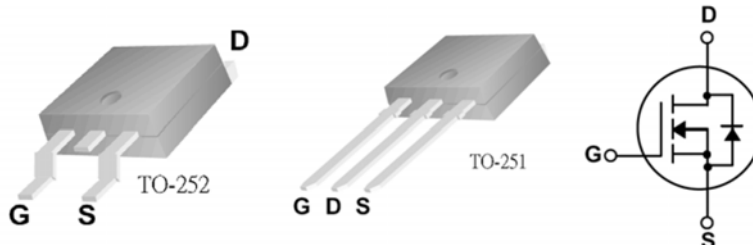
1 Description

These N-Channel enhancement mode power field effect transistors are produced using planar stripe, DMOS technology.

This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency switched mode power supplies, active power factor correction based on half bridge topology.

2 Features

- 60V / 16A
- $R_{DS(on)} = 52m\Omega(\text{typ}) \cdot V_{GS} = 10V, I_D = 15A$
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability..



3 Absolute Maximum Ratings $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	APQ16SN06AA-XXM0	APQ16SN06AB-XXM0	Units
		APQ16SN06AA-XXJ0	APQ16SN06AB-XXJ1	
		TO-251	TO-252	
V_{DSS}	Drain-Source Voltage	60		V
I_D	Drain Current - Continuous ($T_C = 25^\circ\text{C}$)	16		A
	- Continuous ($T_C = 70^\circ\text{C}$)	13		A
I_{DM}	Drain Current – Pulsed ①	65		A
V_{GS}	Gate-Source Voltage	± 25		V
P_D	Power Dissipation ($T_C = 25^\circ\text{C}$) - De-rate above 25°C	25		W
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150		$^\circ\text{C}$

* note :

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

4 Thermal Characteristics

Symbol	Parameter	APQ16SN06AA-XXM0	APQ16SN06AB-XXM0	Units
		APQ16SN06AA-XXJ0	APQ16SN06AB-XXJ1	
		TO-251	TO-252	
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	5		°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	62.5		°C/W

5 Electrical Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

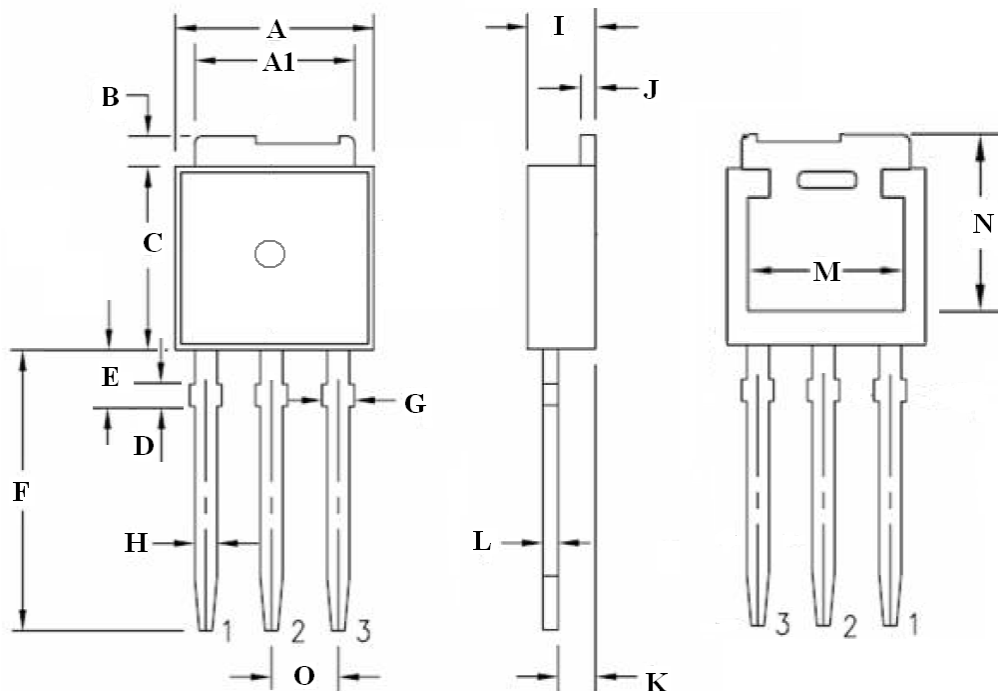
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _D = 250 μA	60	--	--	V
I _{DSS}	Gate to Source leakage current	V _{DS} = 60 V, V _{GS} = 0 V	--	--	1	μA
I _{GSSF}	Gate-Body Leakage Current, Forward	V _{GS} = 25 V, V _{DS} = 0 V	--	--	100	nA
I _{GSSR}	Gate-Body Leakage Current, Reverse	V _{GS} = -25 V, V _{DS} = 0 V	--	--	-100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250 μA	1.0	--	3.0	V
R _{DS(on)}	Static Drain-Source On-Resistance	V _{GS} = 10 V, I _D = 15 A ①	--	52	62	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = 30 V, V _{GS} = 0 V, f = 1.0 MHz	--	523	--	pF
C _{oss}	Output Capacitance		--	47	--	pF
C _{rss}	Reverse Transfer Capacitance		--	14	--	pF
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} = 30 V, I _D = 1A, R _G = 3 Ω ①	--	11	--	Ns
t _r	Turn-On Rise Time		--	13	--	Ns
t _{d(off)}	Turn-Off Delay Time		--	34	--	Ns
t _f	Turn-Off Fall Time		--	4	--	Ns
Q _g	Total Gate Charge	V _{DS} = 48 V, I _D = 16A, V _{GS} = 10 V ①	--	17	--	nC
Q _{gs}	Gate-Source Charge		--	4.2	--	nC
Q _{gd}	Gate-Drain Charge		--	5	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} = 0 V, I _S = 15 A	--	1	--	V

Notes:

① Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$. Depend on FT Test

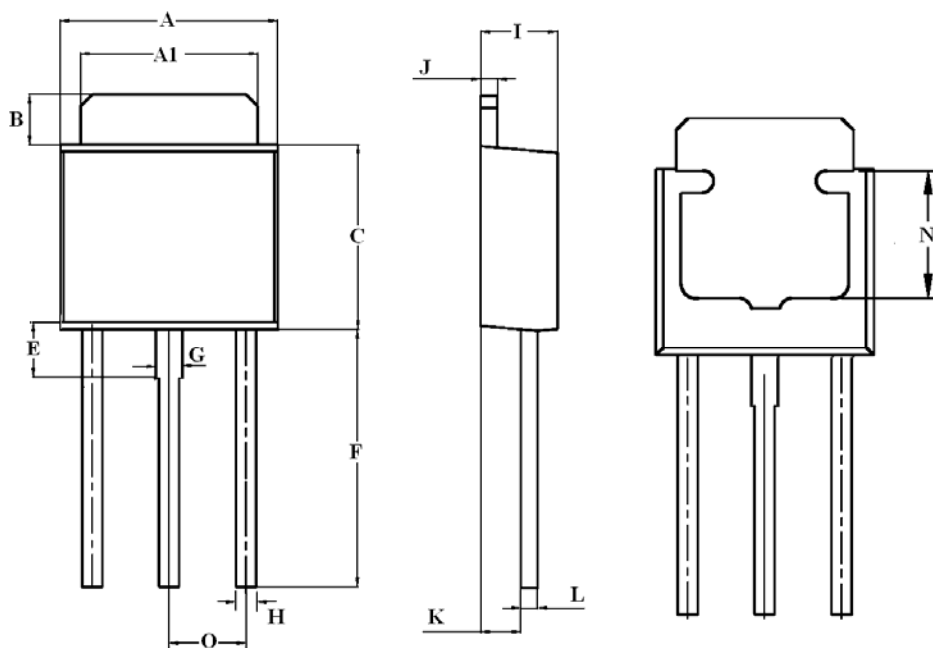
6 Package Dimensions

APQ16SN06AA-XXM0
TO-251



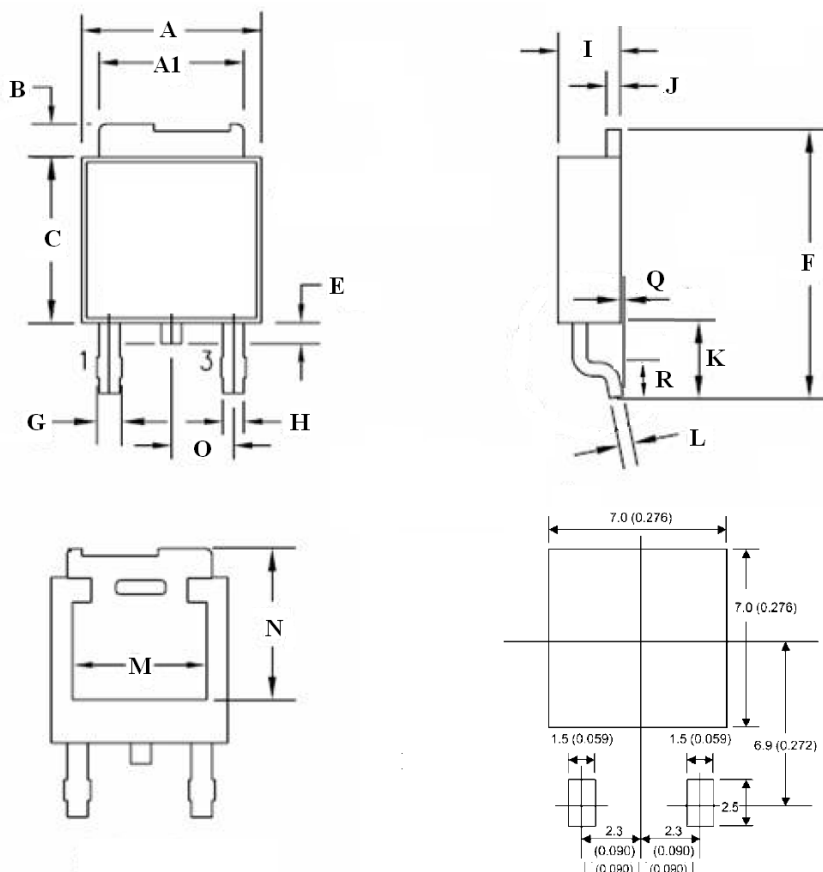
TO-251 DIMENSION							
DIM	MILLIMETERS						
	MIN	MAX	TYP.	DIM	MIN	MAX	TYP.
A	6.35	6.73	6.54	H	0.64	0.89	0.77
A1	4.95	5.46	5.21	I	2.18	2.39	2.29
B	0.89	1.27	1.08	J	0.46	0.89	0.66
C	5.97	6.22	6.10	K	0.89	1.14	1.02
D	1.14	1.52	1.33	L	0.46	0.61	0.54
E	1.91	2.29	2.10	M	4.32	--	--
F	8.89	9.65	9.27	N	5.21	-	-
G	0.84	1.14	0.99	O	2.29 BSC		

APQ16SN06AA-XXJ0
TO-251



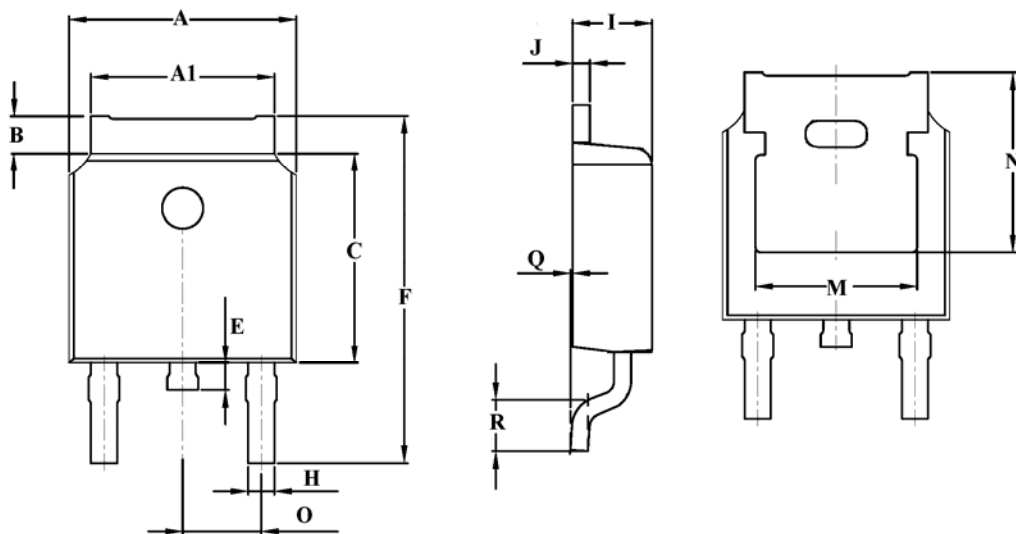
TO-251 DIMENSION							
DIM	MILLIMETERS						
	MIN	MAX	TYP.	DIM	MIN	MAX	TYP
A	6.350	6.650	6.50	H	0.500	0.700	0.600
A1	5.200	5.400	5.300	I	2.200	2.400	2.300
B	1.350	1.650	1.500	J	0.430	0.580	0.505
C	5.400	5.700	5.550	K	1.050	1.350	1.2
E	1.91	2.29	2.100	L	0.430	0.580	0.505
F	7.500	7.900	7.700	N	3.800 REF.		
G	0.700	0.900	0.800	O	2.300 Typ.		

APQ16SN06AB-XXM0 TO-252



TO-252DIMENSION							
DIM	MILLIMETERS						
	MIN	MAX	TYP.	DIM	MIN	MAX	TYP.
A	6.35	6.73	6.54	J	0.46	0.61	0.535
A1	5.21	5.46	5.335	K	2.550	2.900	2.725
B	0.89	1.27	1.08	L	0.46	0.61	0.535
C	5.97	6.22	6.095	M	4.83	--	
E	0.64	1.01	0.825	N	5.21	--	
F	9.65	10.14	9.895	O	2.29 BSC		
G	0.84	1.14	0.99	P	0.51 BSC		
H	0.64	0.89	0.765	Q	0	0.130	0.065
I	2.19	2.38	2.285	R	1.40	1.780	1.590

APQ16SN06AB-XXJ1 TO-252



TO-252DIMENSION							
DIM	MILLIMETERS						
	MIN	MAX	TYP.	DIM	MIN	MAX	TYP
A	6.50	6.70	6.60	J	0.46	0.56	0.51
A1	5.12	5.46	5.29	K	2.9 REF		
B	0.89	1.27	1.08	L	0.56	0.46	0.51
C	6.00	6.20	6.10	M	4.83 REF		
E	0.6	1.0	0.80	N	5.35 REF		
F	9.80	10.4	10.00	O	2.19	2.39	2.29
H	0.71	0.81	0.76	Q	0	0.10	0.05
I	2.20	2.38	2.29	R	1.40	1.70	1.55



DEVICE SPECIFICATION

APQ16SN06AA
APQ16SN06AB

60V/16A N-Channel MOSFET

Note

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