



**Advanced Power
Electronics Corp.**

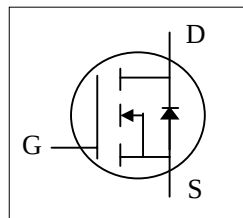
AP75N07AGP-HF

Halogen-Free Product

N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

- ▼ Low Gate Charge
- ▼ Simple Drive Requirement
- ▼ Fast Switching Characteristic
- ▼ Halogen Free & RoHS Compliant Product

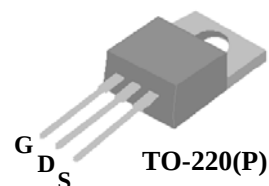


BV_{DSS}	75V
$R_{DS(ON)}$	11m Ω
I_D	80A

Description

Advanced Power MOSFETs from APEC provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The TO-220 package is widely preferred for commercial-industrial through-hole applications and suited for low voltage applications such as DC/DC converters.



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	75	V
V_{GS}	Gate-Source Voltage	± 30	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10V ⁴	80	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10V	70	A
I_{DM}	Pulsed Drain Current ¹	320	A
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	300	W
E_{AS}	Single Pulse Avalanche Energy ³	450	mJ
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Value	Units
Rthj-c	Maximum Thermal Resistance, Junction-case	0.5	$^\circ\text{C}/\text{W}$
Rthj-a	Maximum Thermal Resistance, Junction-ambient	62	$^\circ\text{C}/\text{W}$



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Electrical Characteristics@T_J=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	75	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =40A	-	-	11	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2	-	4	V
g _{fs}	Forward Transconductance	V _{DS} =15V, I _D =40A	-	78	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =75V, V _{GS} =0V	-	-	10	μA
	Drain-Source Leakage Current (T _J =125°C)	V _{DS} =60V, V _{GS} =0V	-	-	250	μA
I _{GSS}	Gate-Source Leakage	V _{GS} =±30V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge	I _D =40A	-	100	160	nC
Q _{gs}	Gate-Source Charge	V _{DS} =60V	-	13	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =10V	-	47	-	nC
t _{d(on)}	Turn-on Delay Time	V _{DD} =40V	-	15	-	ns
t _r	Rise Time	I _D =30A	-	80	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω	-	67	-	ns
t _f	Fall Time	V _{GS} =10V	-	86	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	3220	5150	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	650	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	220	-	pF
R _g	Gate Resistance	f=1.0MHz	-	3.5	7	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	T _J =25°C, I _S =40A, V _{GS} =0V	-	-	1.5	V
t _{rr}	Reverse Recovery Time	I _S =40A, V _{GS} =0V	-	80	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	235	-	nC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Starting T_J=25°C, V_{DD}=50V, L=1mH, R_G=25Ω, I_{AS}=30A.
- 4.Package limitation current is 80A, calculated continuous current based on maximum allowable junction temperature is 108A.

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED.

APEC DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

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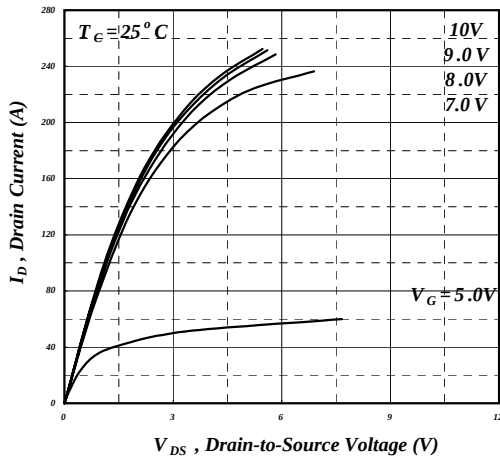


Fig 1. Typical Output Characteristics

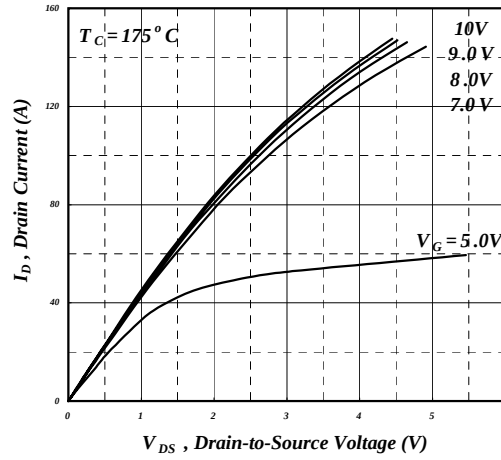


Fig 2. Typical Output Characteristics

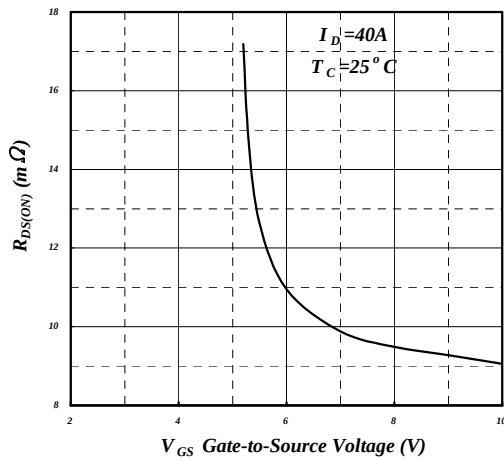


Fig 3. On-Resistance v.s. Gate Voltage

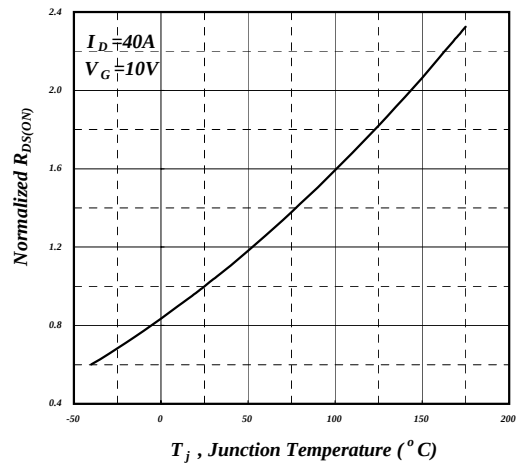


Fig 4. Normalized On-Resistance v.s. Junction Temperature

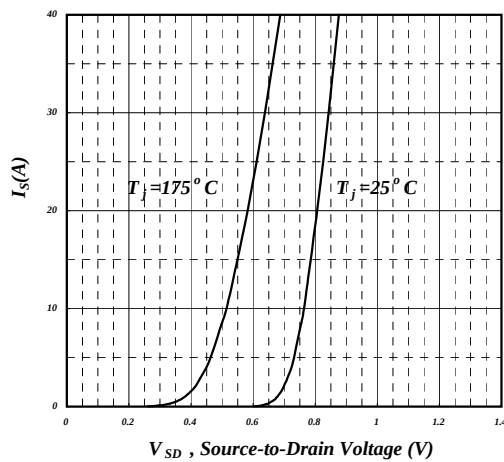


Fig 5. Forward Characteristic of Reverse Diode

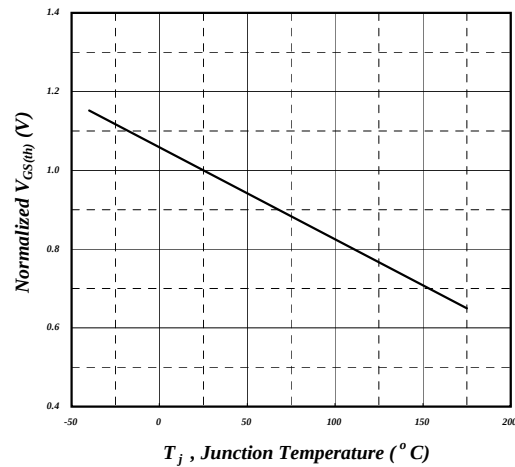


Fig 6. Gate Threshold Voltage v.s. Junction Temperature



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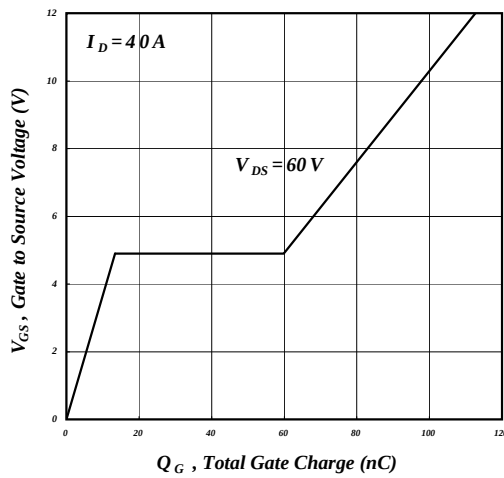


Fig 7. Gate Charge Characteristics

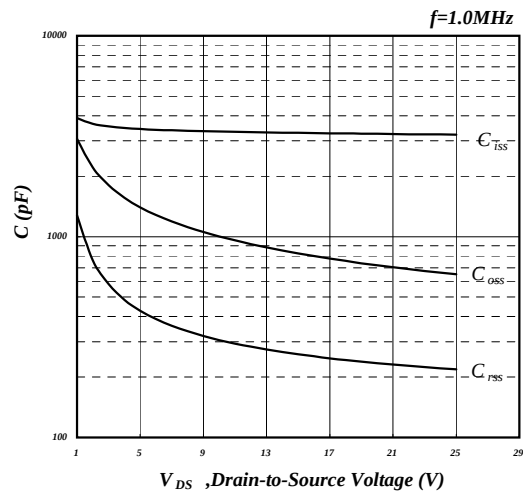


Fig 8. Typical Capacitance Characteristics

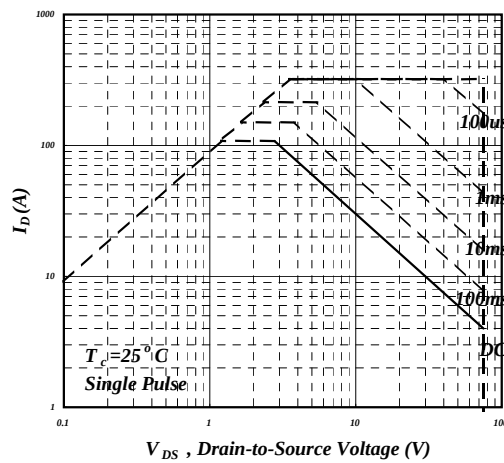


Fig 9. Maximum Safe Operating Area

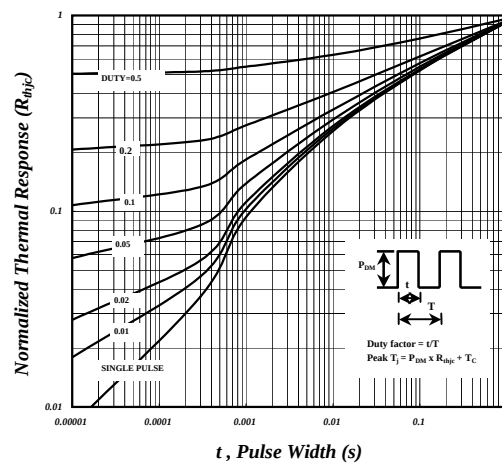


Fig 10. Effective Transient Thermal Impedance

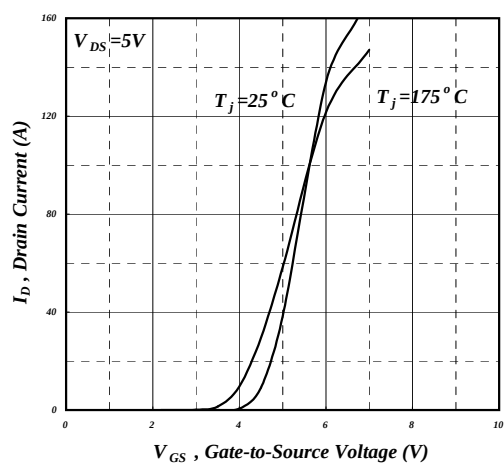


Fig 11. Transfer Characteristics

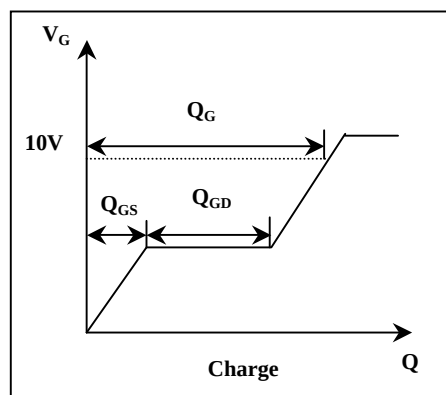


Fig 12. Gate Charge Waveform