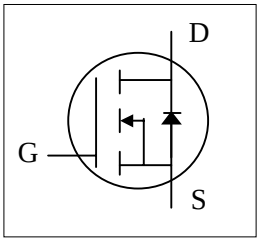
AP97T07GP-HF

Halogen-Free Product

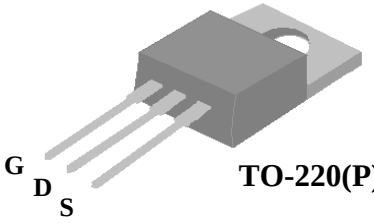
Advanced Power Electronics Corp.

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

- ▼ **Simple Drive Requirement**
- ▼ **Lower On-resistance**
- ▼ **RoHS Compliant & Halogen-Free**



BV_{DSS}	75V
$R_{DS(ON)}$	3.6mΩ
I_D	220A



TO-220(P)

Description

AP97T07 series are from Advanced Power innovated design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance. It provides the designer with an extreme efficient device for use in a wide range of power applications.

The TO-220 package is widely preferred for all commercial-industrial through hole applications. The low thermal resistance and low package cost contribute to the worldwide popular package.

Absolute Maximum Ratings@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	75	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Drain Current, V_{GS} @ 10V(Silicon Limited)	220	A
I_D@T_C=100℃	Drain Current, V_{GS} @ 10V(Silicon Limited)	150	A
I_D@T_C=25℃	Drain Current, V_{GS} @ 10V(Package Limited)	120	A
I_{DM}	Pulsed Drain Current[1]	880	A
P_D@T_C=25℃	Total Power Dissipation	375	W
T_{STG}	Storage Temperature Range	-55 to 175	℃
T_J	Operating Junction Temperature Range	-55 to 175	℃

Thermal Data

Symbol	Parameter	Value	Units
Rthj-c	Maximum Thermal Resistance, Junction-case	0.4	℃/W
Rthj-a	Maixmum Thermal Resistance, Junction-ambient	62	℃/W

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=250uA	75	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=60A	-	-	3.6	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	2	-	4	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=60A	-	105	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=75V, V_{GS}=0V	-	-	10	uA
I_{GSS}	Gate-Source Leakage	V_{GS}= ±20V, V_{DS}=0V	-	-	±100	nA
Q_g	Total Gate Charge[2]	I_D=40A	-	120	192	nC
Q_{gs}	Gate-Source Charge	V_{DS}=60V	-	18	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=10V	-	66	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=40V	-	72	-	ns
t_r	Rise Time	I_D=40A	-	240	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=25Ω	-	210	-	ns
t_f	Fall Time	V_{GS}=10V	-	275	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	4300	6880	pF
C_{oss}	Output Capacitance	V_{DS}=25V	-	1160	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	500	-	pF
R_g	Gate Resistance	f=1.0MHz	-	1.9	-	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=40A, V_{GS}=0V	-	-	1.3	V
t_{rr}	Reverse Recovery Time[2]	I_S=40A, V_{GS}=0V	-	85	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	205	-	nC

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse test

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.

APEC RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN.

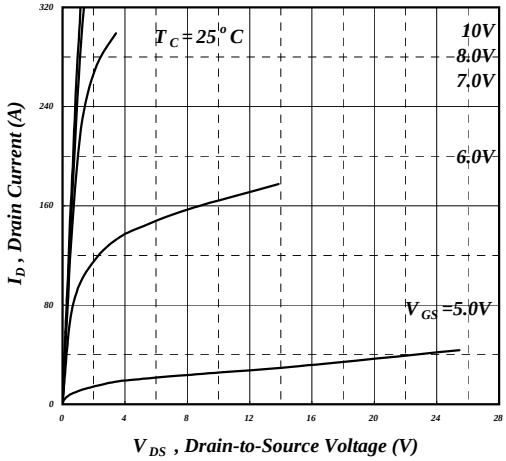


Fig 1. Typical Output Characteristics

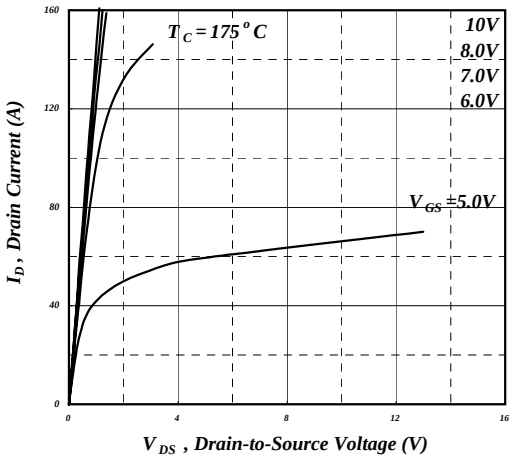


Fig 2. Typical Output Characteristics

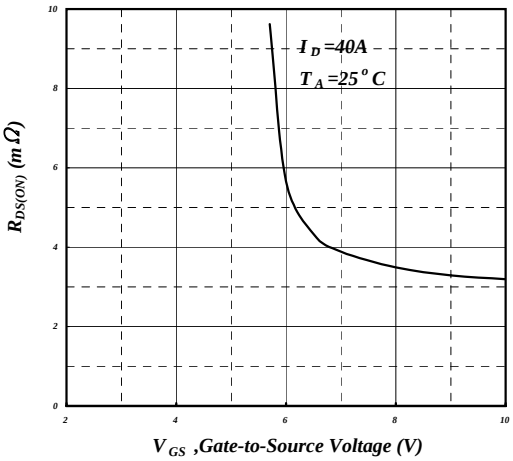


Fig 3. On-Resistance v.s. Gate Voltage

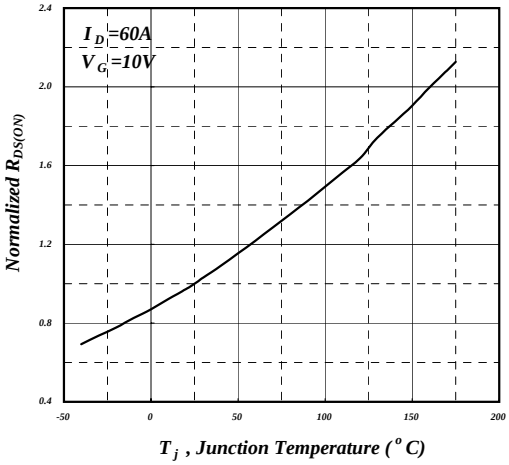


Fig 4. Normalized On-Resistance v.s. Junction Temperature

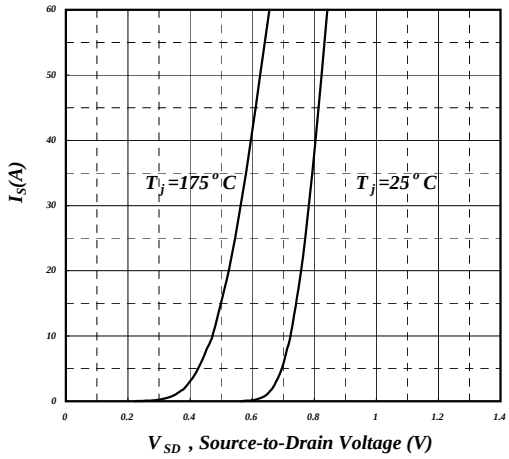


Fig 5. Forward Characteristic of Reverse Diode

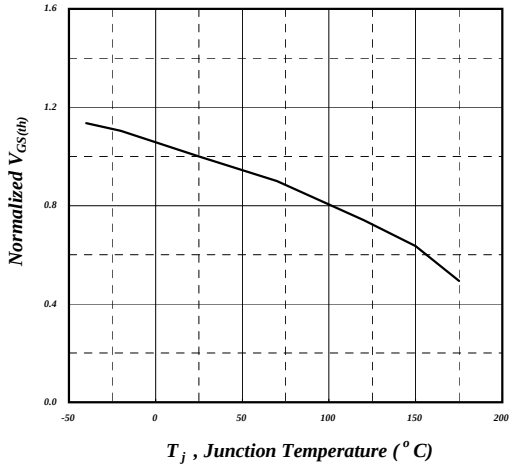


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

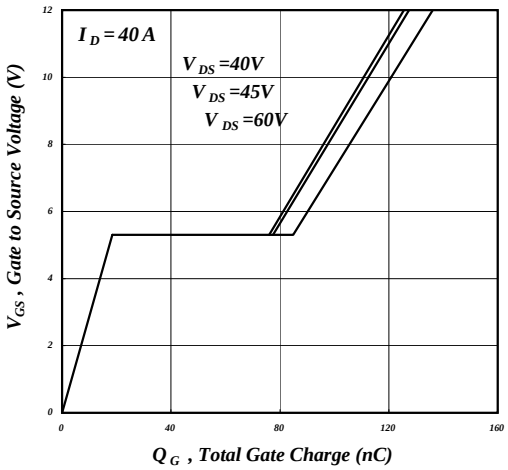


Fig 7. Gate Charge Characteristics

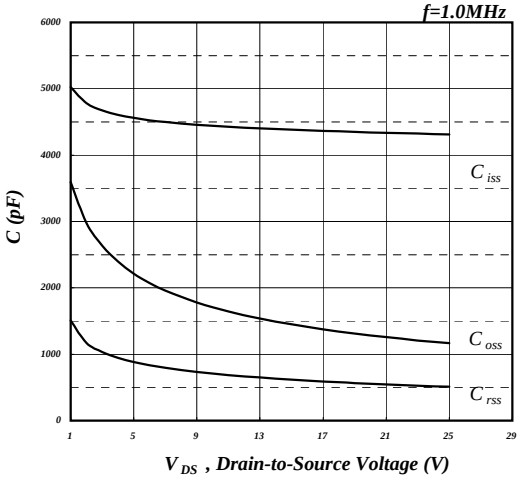


Fig 8. Typical Capacitance Characteristics

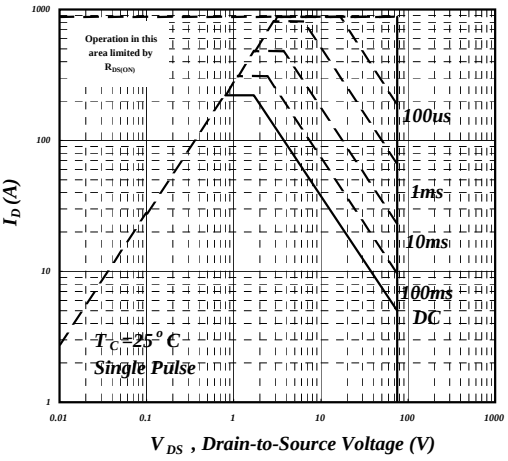


Fig 9. Maximum Safe Operating Area

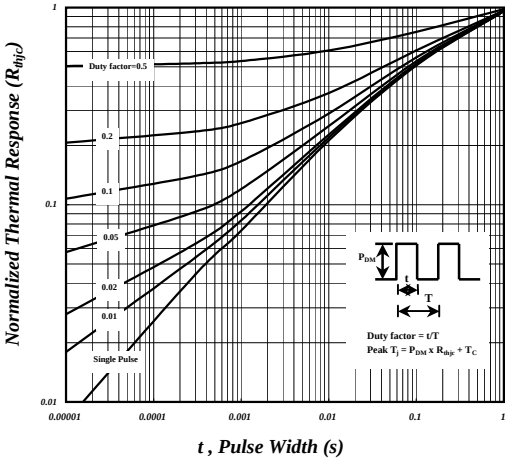


Fig 10. Effective Transient Thermal Impedance

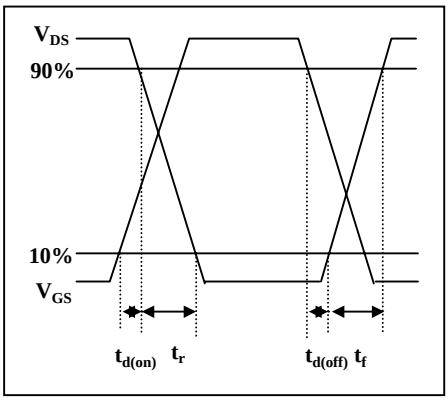


Fig 11. Switching Time Waveform

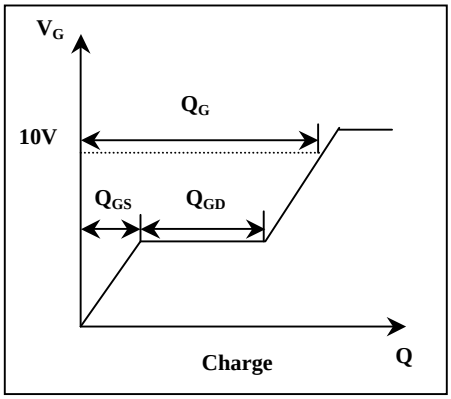
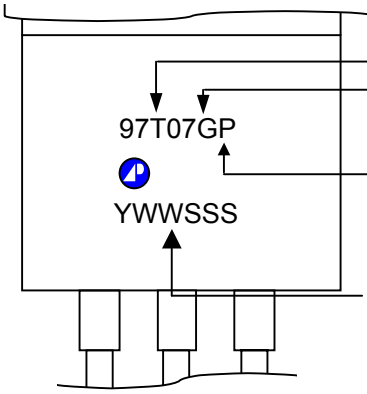


Fig 12. Gate Charge Waveform

MARKING INFORMATION



Part Number

meet Rohs requirement
for low voltage MOSFET only

Package Code

Date Code (YWWSSS)

Y：Last Digit Of The Year

WW：Week

SSS：Sequence