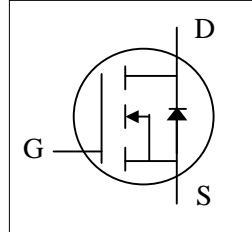




- ▼ Simple Drive Requirement
- ▼ Lower On-resistance
- ▼ Fast Switching Characteristic
- ▼ RoHS Compliant & Halogen-Free

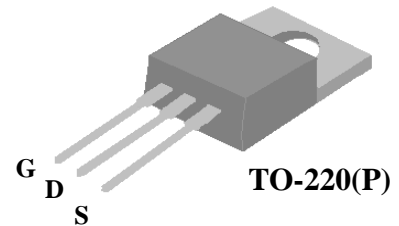


$BV_{DSS}$	100V
$R_{DS(ON)}$	6.5m $\Omega$
$I_D$	97A

## Description

AP92LT10 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

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	100	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D @ T_C = 25^\circ C$	Drain Current, $V_{GS} @ 10V$	97	A
$I_D @ T_C = 100^\circ C$	Drain Current, $V_{GS} @ 10V$	61	A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	360	A
$P_D @ T_C = 25^\circ C$	Total Power Dissipation	138	W
$P_D @ T_A = 25^\circ C$	Total Power Dissipation	2	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ C$

## Thermal Data

Symbol	Parameter	Value	Units
Rthj-c	Maximum Thermal Resistance, Junction-case	0.9	$^\circ C/W$
Rthj-a	Maximum Thermal Resistance, Junction-ambient	62	$^\circ C/W$



# AP92LT10GP-HF

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=10V, I_D=40A$	-	-	6.5	m $\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2	-	5	V
$g_{fs}$	Forward Transconductance	$V_{DS}=5V, I_D=40A$	-	80	-	S
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=80V, V_{GS}=0V$	-	-	25	$\mu A$
$I_{GSS}$	Gate-Source Leakage	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
$Q_g$	Total Gate Charge	$I_D=40A$	-	145	232	nC
$Q_{gs}$	Gate-Source Charge	$V_{DS}=50V$	-	70	-	nC
$Q_{gd}$	Gate-Drain ("Miller") Charge	$V_{GS}=10V$	-	10	-	nC
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=50V$	-	35	-	ns
$t_r$	Rise Time	$I_D=40A$	-	85	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=3.3\Omega$	-	75	-	ns
$t_f$	Fall Time	$V_{GS}=10V$	-	9	-	ns
$C_{iss}$	Input Capacitance	$V_{GS}=0V$	-	14200	22720	pF
$C_{oss}$	Output Capacitance	$V_{DS}=50V$	-	400	-	pF
$C_{rss}$	Reverse Transfer Capacitance	$f=1.0\text{MHz}$	-	30	-	pF
$R_g$	Gate Resistance	$f=1.0\text{MHz}$	-	2	4	$\Omega$

## Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$V_{SD}$	Forward On Voltage <sup>2</sup>	$I_S=40A, V_{GS}=0V$	-	-	1.3	V
$t_{rr}$	Reverse Recovery Time	$I_S=10A, V_{GS}=0V,$	-	60	-	ns
$Q_{rr}$	Reverse Recovery Charge	$di/dt=100A/\mu s$	-	125	-	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.

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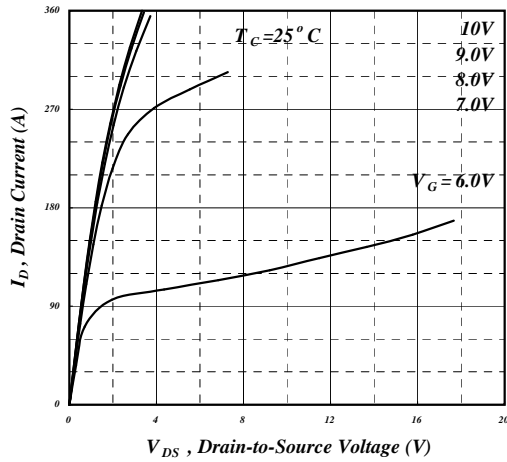


Fig 1. Typical Output Characteristics

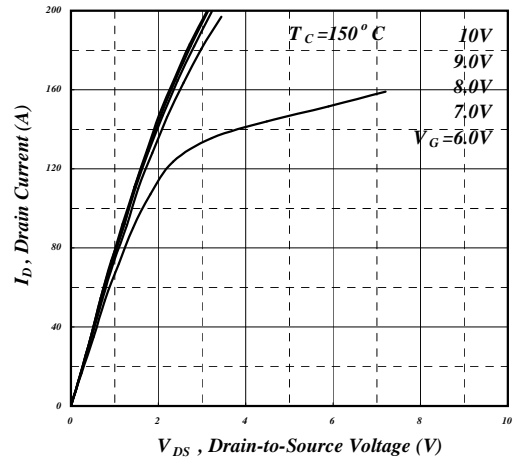


Fig 2. Typical Output Characteristics

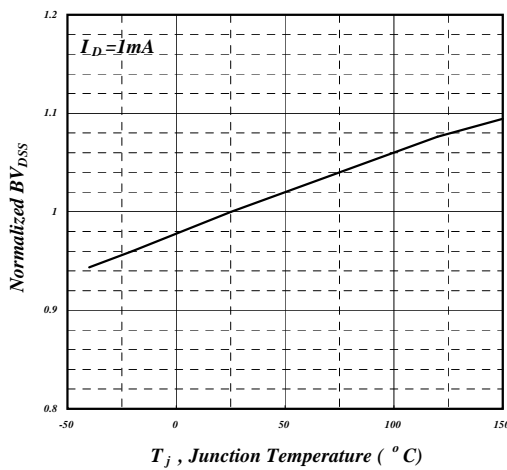


Fig 3. Normalized  $BV_{DSS}$  v.s. Junction Temperature

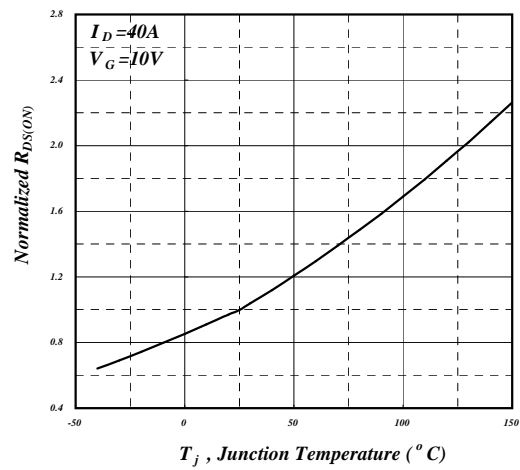


Fig 4. Normalized On-Resistance v.s. Junction Temperature

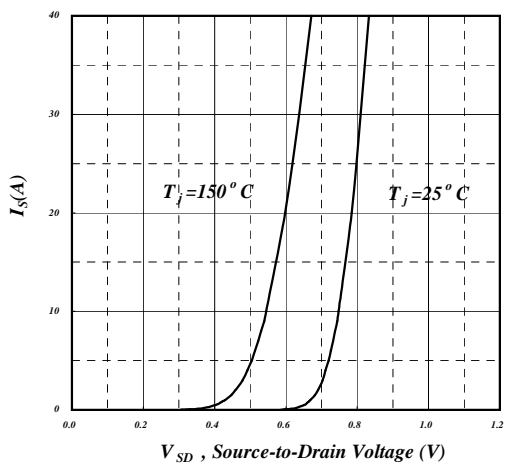


Fig 5. Forward Characteristic of Reverse Diode

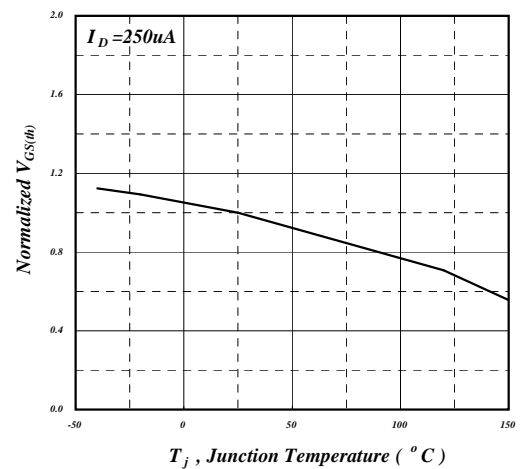
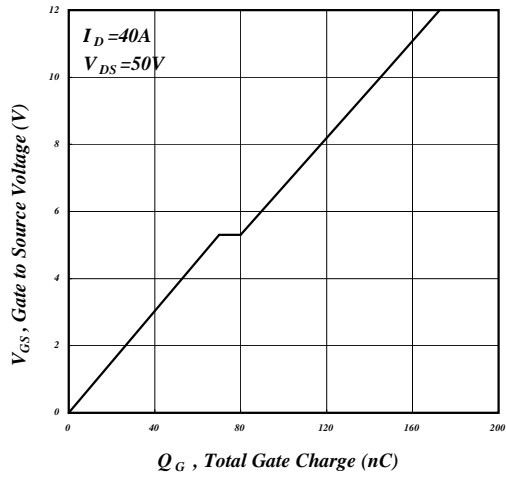
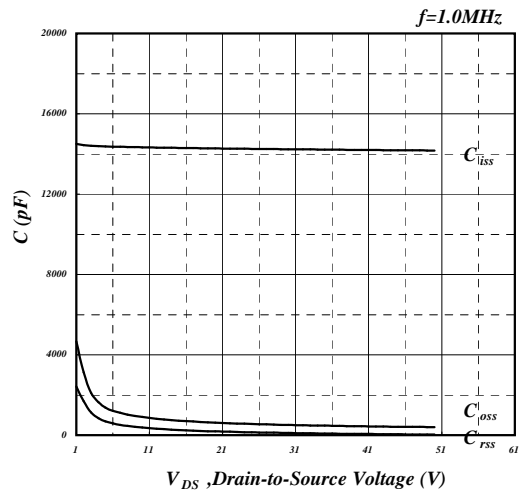


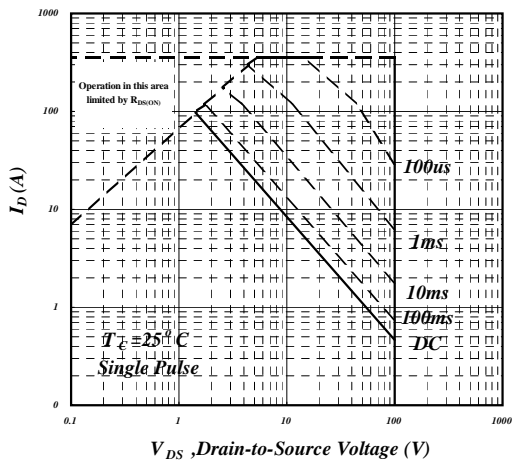
Fig 6. Gate Threshold Voltage v.s. Junction Temperature



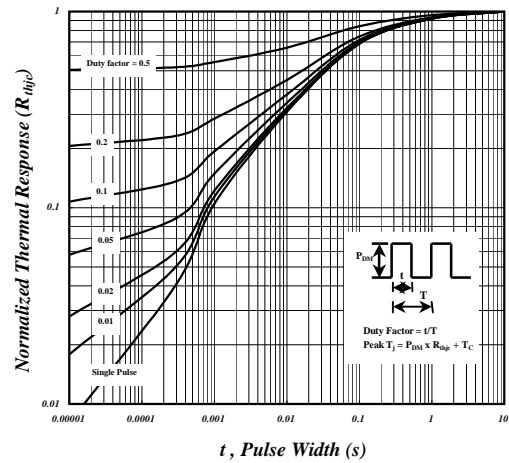
**Fig 7. Gate Charge Characteristics**



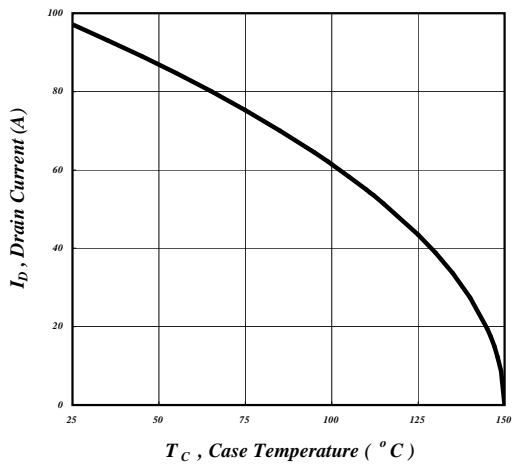
**Fig 8. Typical Capacitance Characteristics**



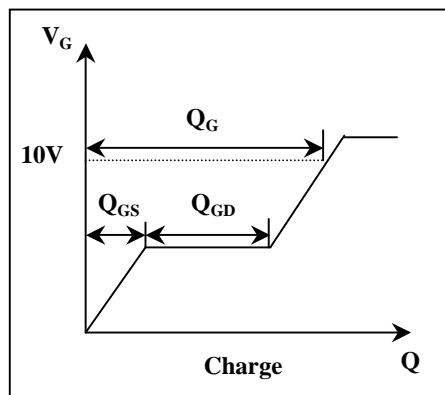
**Fig 9. Maximum Safe Operating Area**



**Fig 10. Effective Transient Thermal Impedance**



**Fig 11. Drain Current v.s. Case Temperature**



**Fig 12. Gate Charge Waveform**