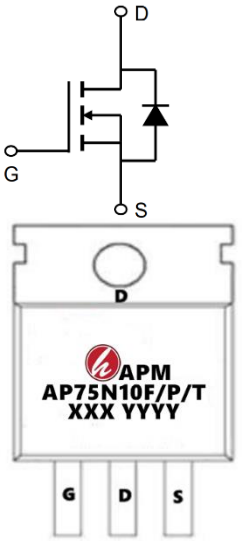
AP75N10F/P/T

100V N-Channel Enhancement Mode MOSFET

Description

The AP75N10F/P/T uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 10V. This device is suitable for use as a Battery protection or in other Switching application.



General Features

V_{DS} = 100V I_D =75A

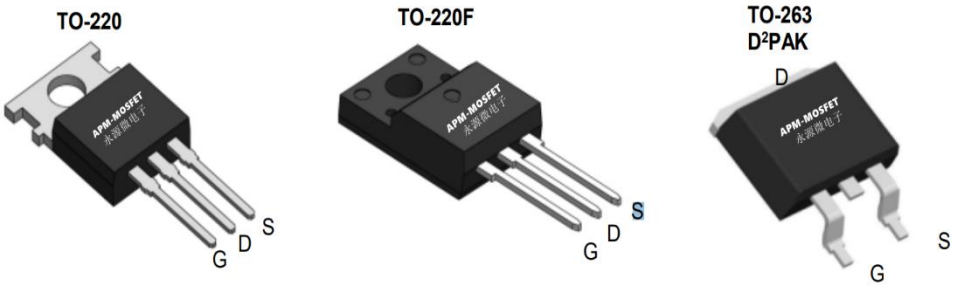
$R_{DS(ON)}$ < 18mΩ@ V_{GS}=10V **(Type：11mΩ)**

Application

Automative lighting

Load switch

Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP75N10F	TO-220F-3L	AP75N10F XXX YYYY	1000
AP75N10P	TO-220-3L	AP75N10P XXX YYYY	1000
AP75N10T	TO-263-3L	AP75N10T XXX YYYY	800

Absolute Maximum Ratings (TC=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	100	V
VGS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Drain Current, V_{GS} @ 10V	75	A
I_D@T_C=100℃	Drain Current, V_{GS} @ 10V	38	A
IDM	Pulsed Drain Current[1]	236	A
EAS	Single Pulse Avalanche Energy	108	mJ
I_{AS}	Avalanche Current	40	A
P_D@T_C=25℃	Total Power Dissipation	146	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
RθJA	Maximum Thermal Resistance, Junctionambient	62.5	℃/W
RθJC	Maximum Thermal Resistance, Junction-case	1.4	℃/W

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	100	-	-	V
IDSS	Zero Gate Voltage Drain Current	V_{DS}=100V, V_{GS}=0V,	-	-	1.0	μA
IGSS	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}=±25V	-	-	±100	nA
VGS(th)	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	2	3	4	V
RDS(on)	Static Drain-Source on-Resistance	V_{GS}=10V, I_D=30A	-	11	18	mΩ
Ciss	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1.0MHz	-	5000	-	pF
Coss	Output Capacitance		-	250	-	pF
Crss	Reverse Transfer Capacitance		-	170	-	pF
Q_g	Total Gate Charge	V_{DD}=30V, I_D=30A, V_{GS}=10V	-	94	-	nC
Qgs	Gate-Source Charge		-	16	-	nC
Qgd	Gate-Drain("Miller") Charge		-	24	-	nC
td(on)	Turn-on Delay Time	V_{DD}=30V,I_D=2A, R_L=15Ω,R_{GEN}=2.5Ω, V_{GS}=10V	-	15	-	ns
tr	Turn-on Rise Time		-	11	-	ns
td(off)	Turn-off Delay Time		-	52	-	ns
t_f	Turn-off Fall Time		-	13	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	75	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	236	A
VSD	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S=30A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F=28A, di/dt=100A/μs	-	33	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	54	-	nC

Note :

1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.

2、The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3、The EAS data shows Max. rating . The test condition is VDD=72V,VGS=10V,L=0.1mH,IAS=40A

4、The power dissipation is limited by 150℃ junction temperature

5、The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation.

Typical Characteristics

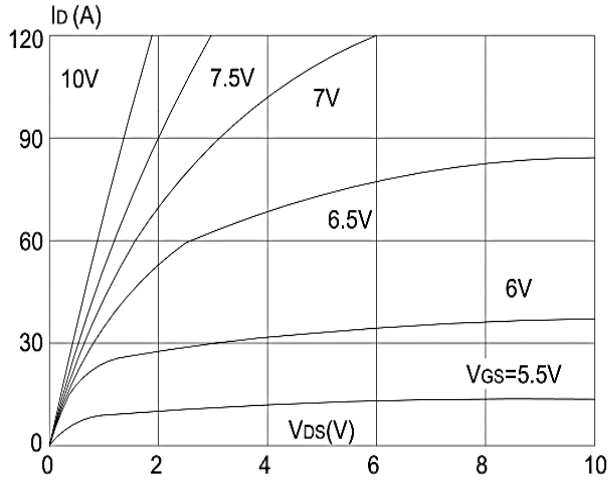


Figure1: Output Characteristics

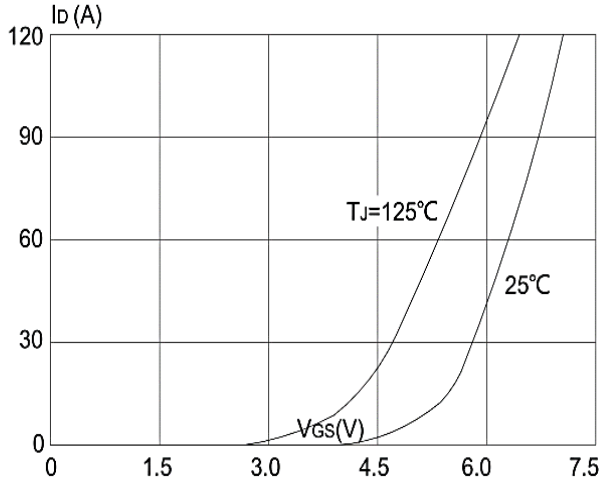


Figure 2: Typical Transfer Characteristics

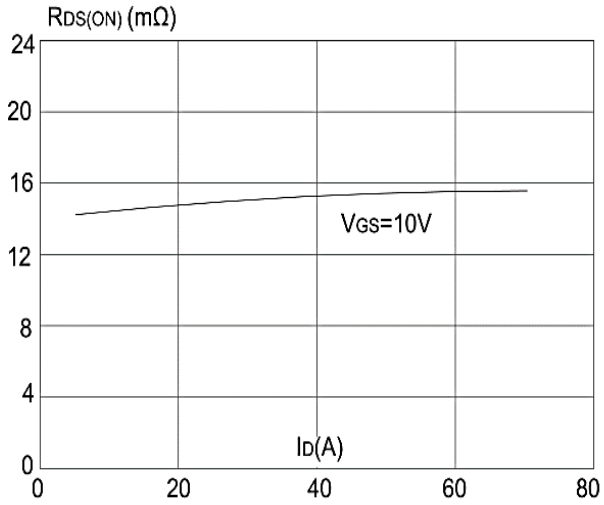


Figure 3:On-resistance vs. Drain Current

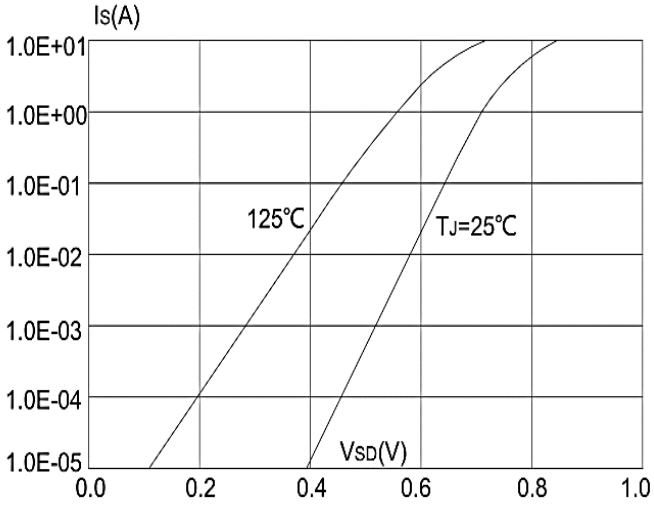


Figure 4: Body Diode Characteristics

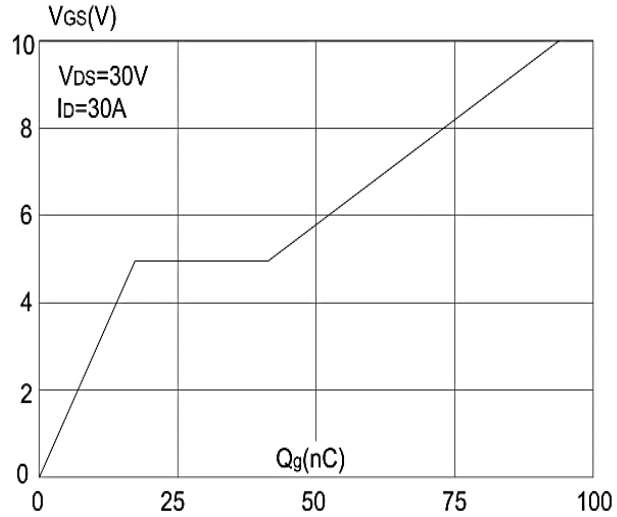


Figure 5: Gate Charge Characteristics

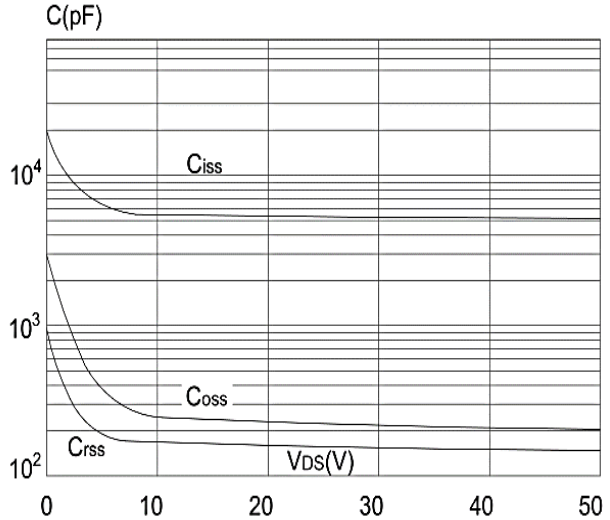


Figure 6: Capacitance Characteristics

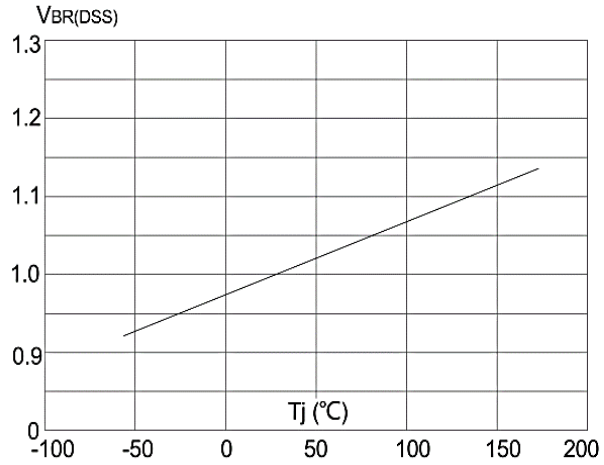


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

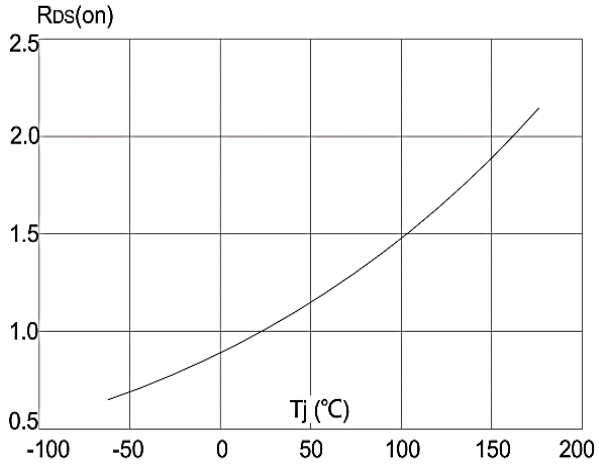


Figure 8: Normalized on Resistance vs. Junction Temperature

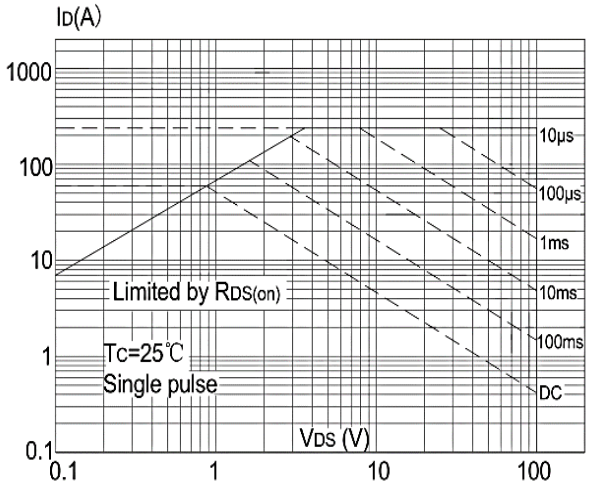


Figure 9: Maximum Safe Operating Area

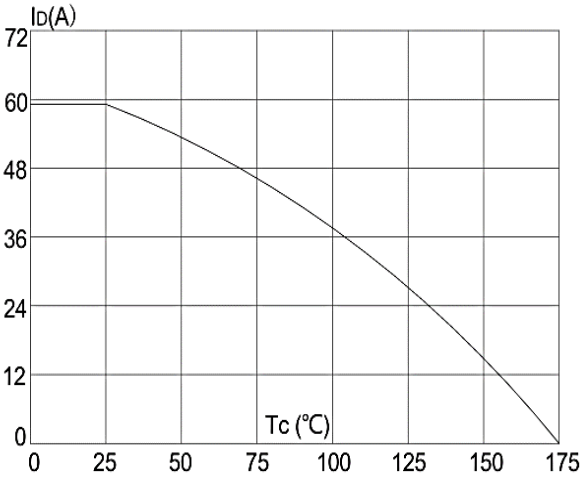


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

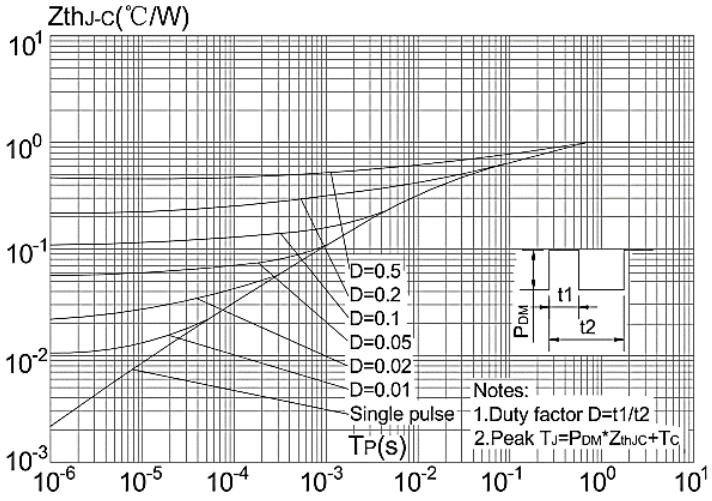
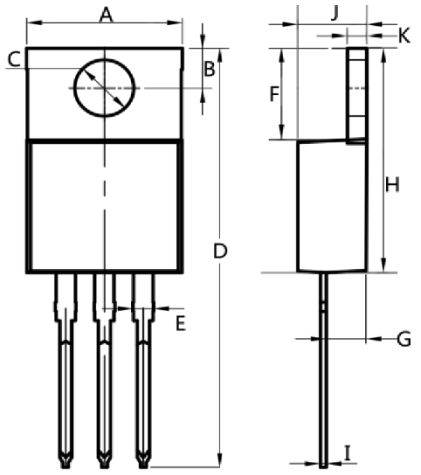


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

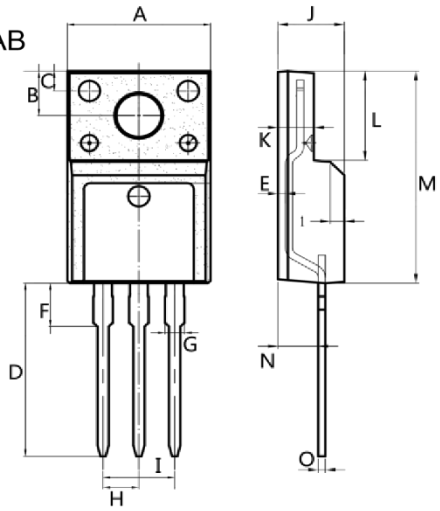
100V N-Channel Enhancement Mode MOSFET

TO-220AB



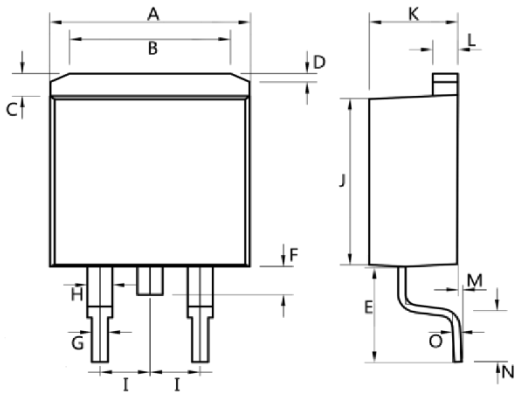
Dim.	Min.	Max.
A	10.0	10.4
B	2.5	3.0
C	3.5	4.0
D	28.0	30.0
E	1.1	1.5
F	6.2	6.6
G	2.9	3.3
H	15.0	16.0
I	0.35	0.45
J	4.3	4.7
K	1.2	1.4
All Dimensions in millimeter		

ITO-220AB



Dim.	Min.	Max.
A	9.9	10.3
B	2.9	3.5
C	1.15	1.45
D	12.75	13.25
E	0.55	0.75
F	3.1	3.5
G	1.25	1.45
H	Typ 2.54	
I	Typ 5.08	
J	4.55	4.75
K	2.4	2. 7
L	6.35	6.75
M	15.0	16.0
N	2.75	3.15
O	0.45	0.60
All Dimensions in millimeter		

TO-263



Dim.	Min.	Max.
A	10.0	10. 5
B	7.25	7.75
C	1.3	1.5
D	0.55	0.75
E	5.0	6.0
F	1.4	1.6
G	0.75	0.95
H	1.15	1.35
I	Typ 2.54	
J	8.4	8.6
K	4.4	4.6
L	1.25	1.45
M	0.02	0.1
N	2.4	2.8
O	0.35	0.45
All Dimensions in millimeter		

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100V N-Channel Enhancement Mode MOSFET

Edition	Date	Change
REV1.0	2023/7/29	Initial release