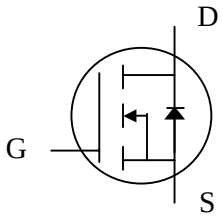
N-channel Enhancement-mode Power MOSFET

Simple Drive Requirement

Low On-resistance

Fast Switching Performance

RoHS-compliant, halogen-free

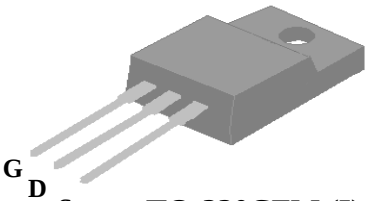


BV_{DSS}	100V
$R_{DS(ON)}$	12mΩ
I_D	42A

Description

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

The AP75T10GI-HF-3 is in the TO-220CFM package, which is widely used for commercial and industrial applications, where a low PCB footprint and/or isolated tab mounting is required.



TO-220CFM (I)

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D at T_C=25°C	Continuous Drain Current	42	A
I_D at T_C=100°C	Continuous Drain Current	26	A
I_{DM}	Pulsed Drain Current[1]	160	A
P_D at T_C=25°C	Total Power Dissipation	44.6	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Value	Units
Rthj-c	Maximum Thermal Resistance, Junction-case	2.8	°C/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient	65	°C/W

Ordering Information

AP75T10GI-HF-3TR **RoHS-compliant, halogen-free TO-220CFM, shipped in tubes.**

Electrical Specifications at 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	100	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=24A	-	-	12	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1	-	3	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=24A	-	80	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=80V, V_{GS}=0V	-	-	25	uA
I_{GSS}	Gate-Source Leakage	V_{GS}= ±20V, V_{DS}=0V	-	-	±100	nA
Q_g	Total Gate Charge[2]	I_D=24A	-	125	200	nC
Q_{gs}	Gate-Source Charge	V_{DS}=80V	-	20	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=10V	-	40	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=50V	-	17	-	ns
t_r	Rise Time	I_D=24A	-	31	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=0.67Ω	-	50	-	ns
t_f	Fall Time	V_{GS}=10V	-	11.5	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	6600	10560	pF
C_{oss}	Output Capacitance	V_{DS}=25V	-	550	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	300	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=24A, V_{GS}=0V	-	-	1.3	V
t_{rr}	Reverse Recovery Time[2]	I_S=10A, V_{GS}=0V	-	60	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	130	-	nC

Notes:

1. Pulse width limited by maximum junction temperature.
2. Pulse test

Typical Electrical Characteristics

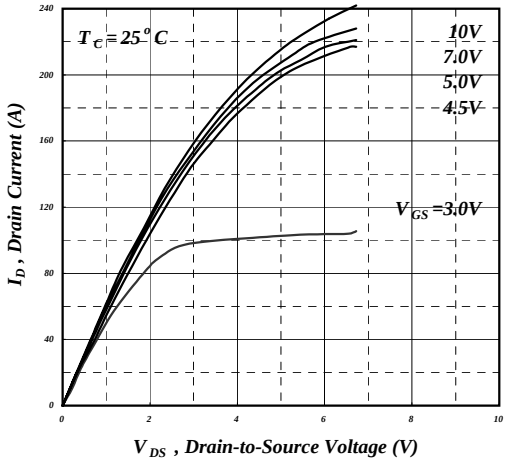


Fig 1. Typical Output Characteristics

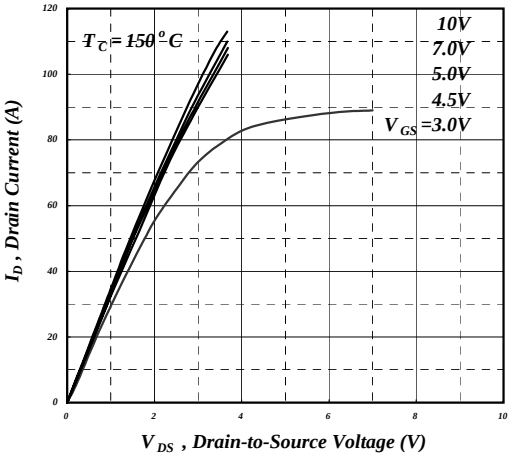


Fig 2. Typical Output Characteristics

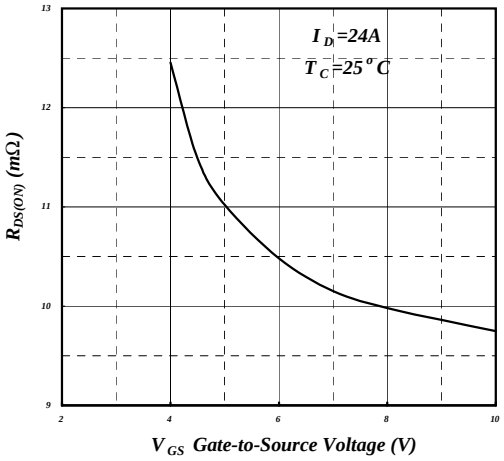


Fig 3. On-Resistance vs. Gate Voltage

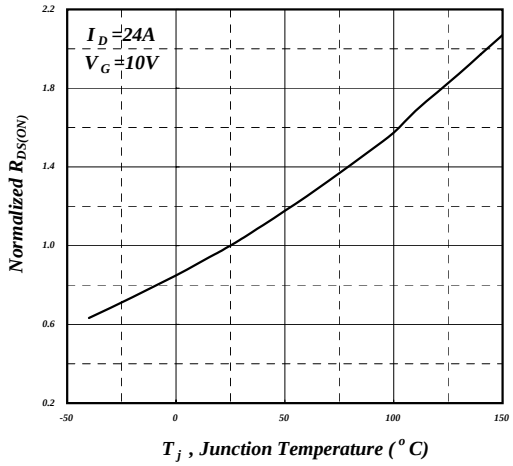


Fig 4. Normalized On-Resistance vs. Junction Temperature

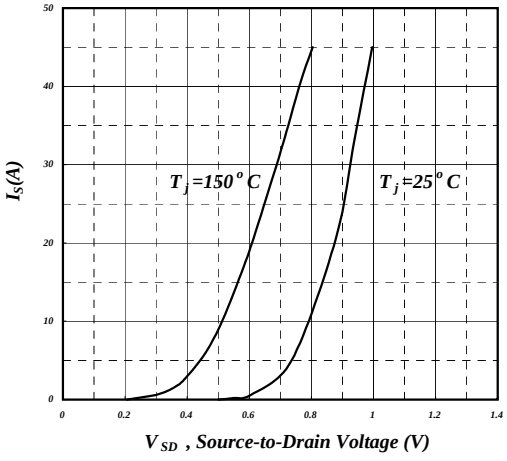


Fig 5. Forward Characteristic of Reverse Diode

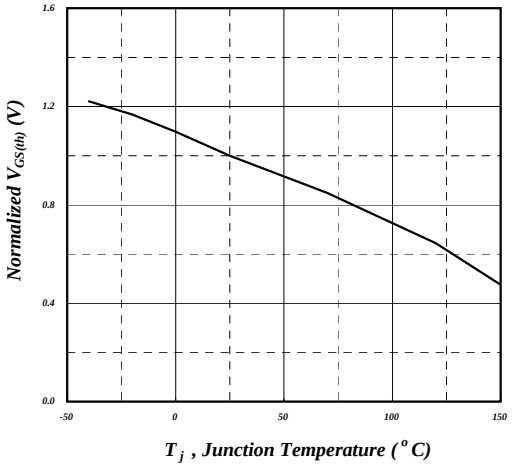


Fig 6. Gate Threshold Voltage vs. Junction Temperature

Typical Electrical Characteristics (cont.)

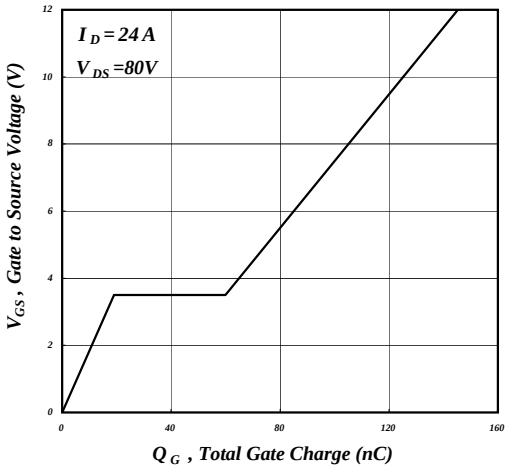


Fig 7. Gate Charge Characteristics

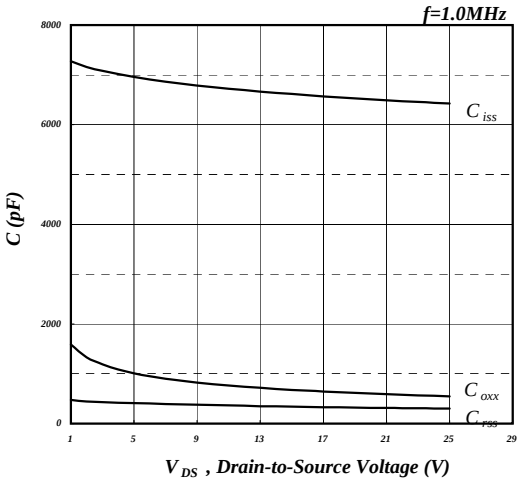


Fig 8. Typical Capacitance Characteristics

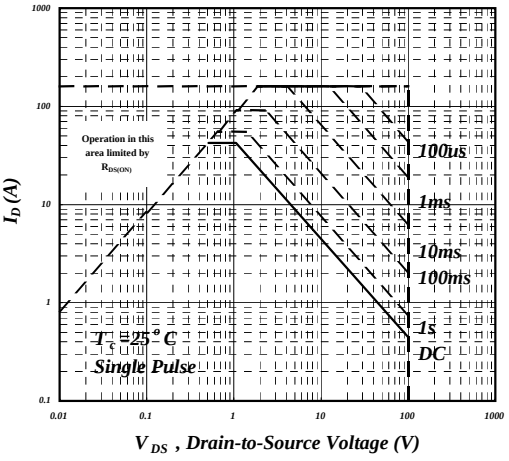


Fig 9. Maximum Safe Operating Area

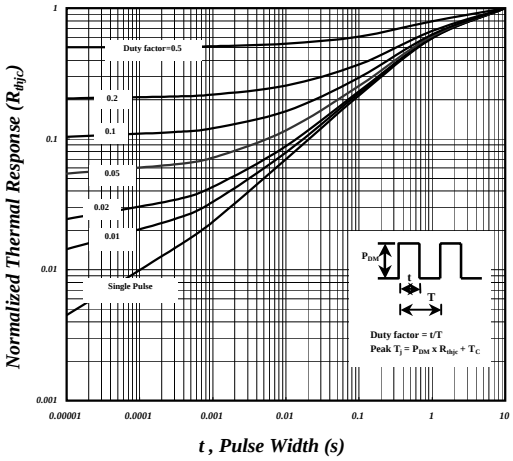


Fig 10. Effective Transient Thermal Impedance

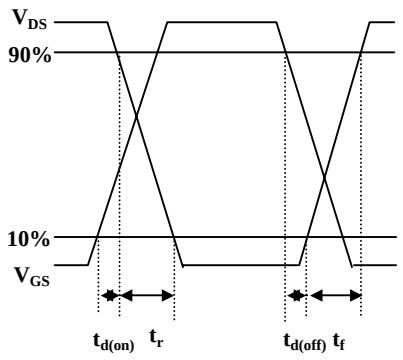


Fig 11. Switching Time Waveforms

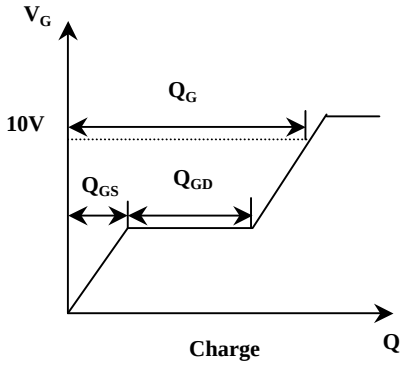
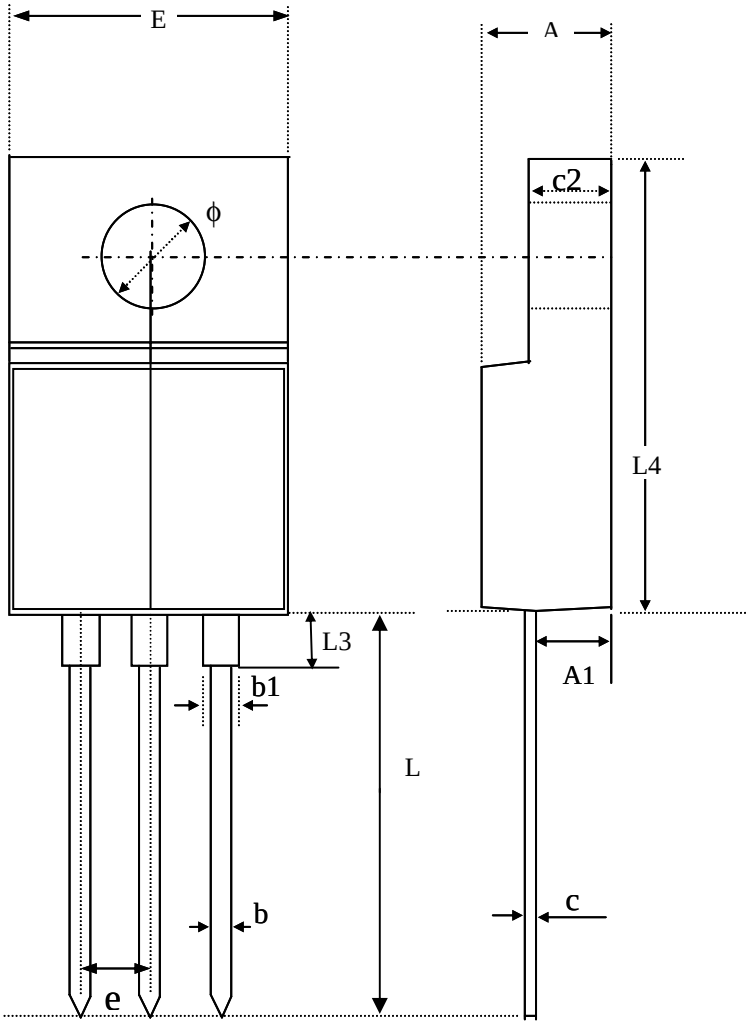


Fig 12. Gate Charge Waveform

Package Dimensions: TO-220CFM



SYMBOLS	Millimeters		
	MIN	NOM	MAX
A	4.30	4.70	4.90
A1	2.30	2.65	3.00
b	0.50	0.70	0.90
b1	0.95	1.20	1.50
c	0.45	0.65	0.80
c2	2.30	2.60	2.90
E	9.70	10.00	10.40
L	12.00	---	15.00
L3	2.91	3.41	3.91
L4	14.70	15.40	16.10
ϕ	----	3.20	----
e	----	2.54	----

1. All Dimensions are in millimeters.
2. Dimensions do not include mold protrusions.

Marking Information