



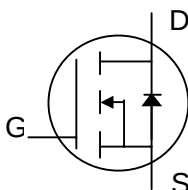
N-channel Enhancement-mode Power MOSFET

Simple Drive Requirement

Low On-resistance

Fast Switching Speed

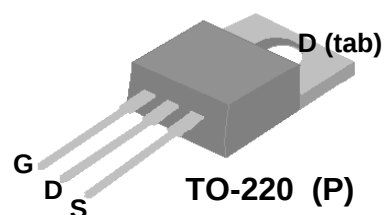
RoHS-compliant, halogen-free



BV_{DS}	100V
$R_{DS(ON)}$	12m Ω
I_D	75A

Description

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



The TO-220 through-hole package is widely used in commercial and industrial applications where a small pcb footprint or an attached heatsink are required.

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D at $T_C=25^\circ\text{C}$	Continuous Drain Current	75	A
I_D at $T_C=100^\circ\text{C}$	Continuous Drain Current	47	A
I_{DM}	Pulsed Drain Current ¹	300	A
P_D at $T_C=25^\circ\text{C}$	Total Power Dissipation	138	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

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

Ordering Information

AP75T10BGP-HF-3TB : in RoHS-compliant halogen-free TO-220, shipped in tubes, (50 pcs/tube)



Electrical Specifications at $T_j=25^{\circ}\text{C}$ (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 ²	$V_{GS}=10V, I_D=30A$	-	-	12	m Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1	-	3	V
g_{fs}	Forward Transconductance	$V_{DS}=5V, I_D=30A$	-	75	-	S
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=100V, V_{GS}=0V$	-	-	25	μA
I_{GSS}	Gate-Source Leakage	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Q_g	Total Gate Charge ²	$I_D=30A$	-	70	112	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=80V$	-	18	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	$V_{GS}=4.5V$	-	43	-	nC
$t_{d(on)}$	Turn-on Delay Time ²	$V_{DS}=50V$	-	16.5	-	ns
t_r	Rise Time	$I_D=10A$	-	17.5	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=1\Omega, V_{GS}=10V$	-	54	-	ns
t_f	Fall Time	$R_D=5\Omega$	-	13	-	ns
C_{iss}	Input Capacitance	$V_{GS}=0V$	-	6650	10640	pF
C_{oss}	Output Capacitance	$V_{DS}=25V$	-	550	-	pF
C_{rss}	Reverse Transfer Capacitance	$f=1.0MHz$	-	290	-	pF
R_g	Gate Resistance	$f=1.0MHz$	-	1.1	-	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage ²	$I_S=30A, V_{GS}=0V$	-	-	1.3	V
t_{rr}	Reverse Recovery Time ²	$I_S=30A, V_{GS}=0V$	-	65	-	ns
Q_{rr}	Reverse Recovery Charge	$di/dt=100A/\mu s$	-	140	-	nC

Notes:

- 1.Pulse width limited by maximum junction temperature.
- 2.Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

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

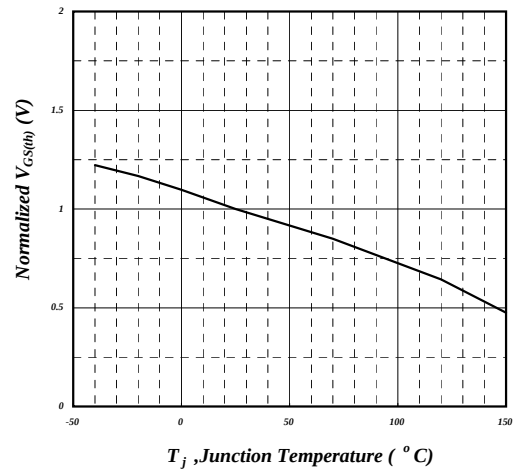
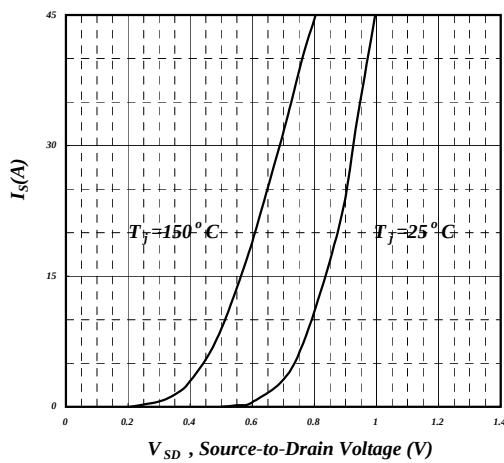
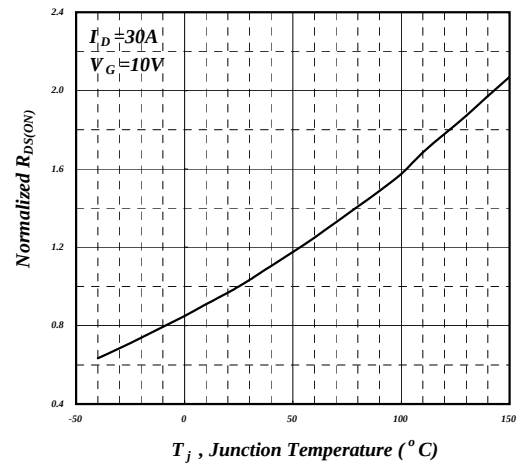
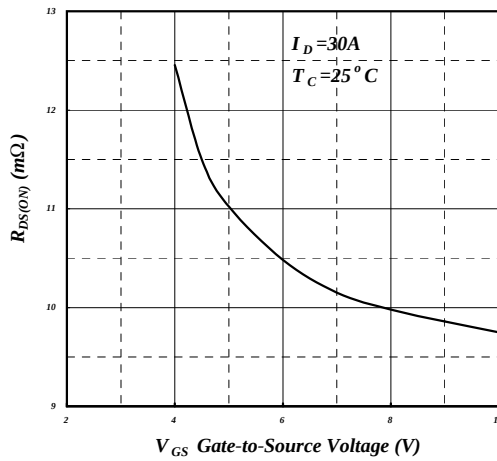
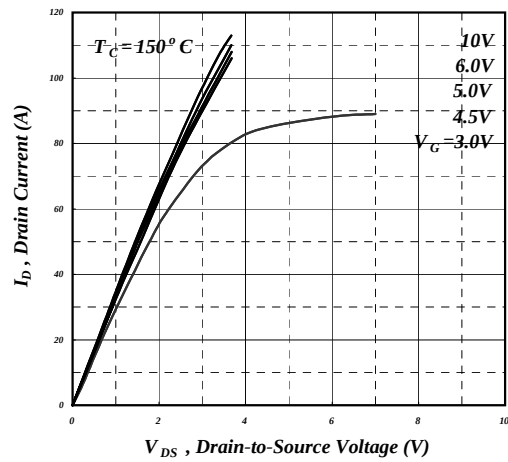
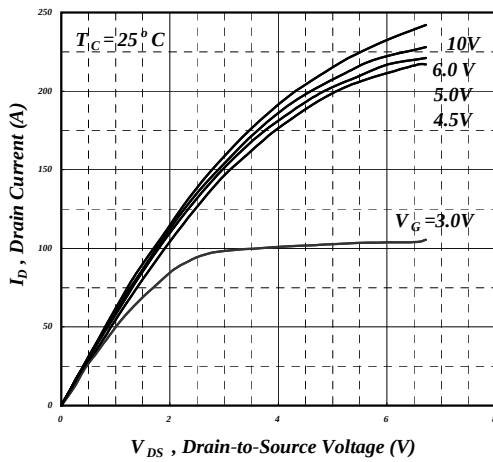
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Typical Electrical Characteristics





Typical Electrical Characteristics (cont.)

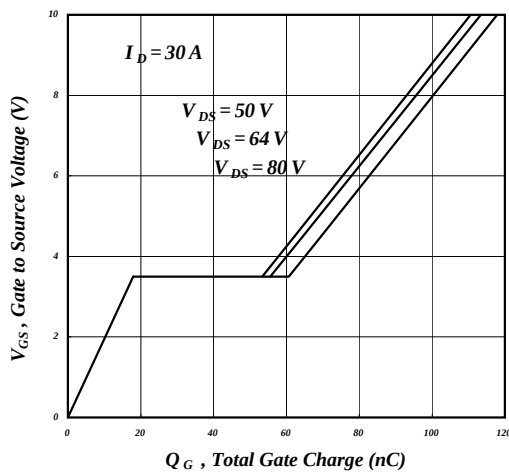


Fig 7. Gate Charge Characteristics

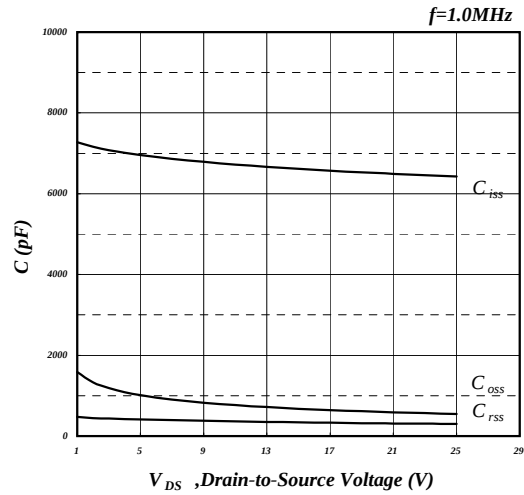


Fig 8. Typical Capacitance Characteristics

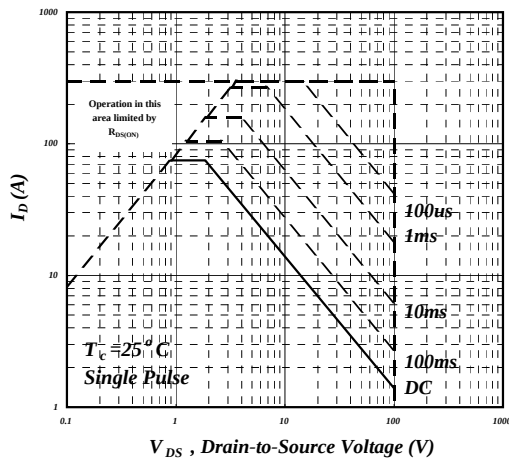


Fig 9. Maximum Safe Operating Area

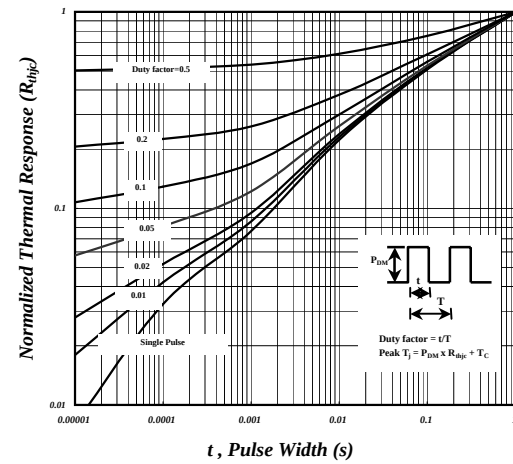


Fig 10. Effective Transient Thermal Impedance

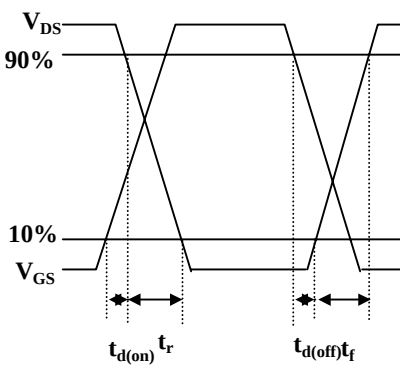


Fig 11. Switching Time Waveforms

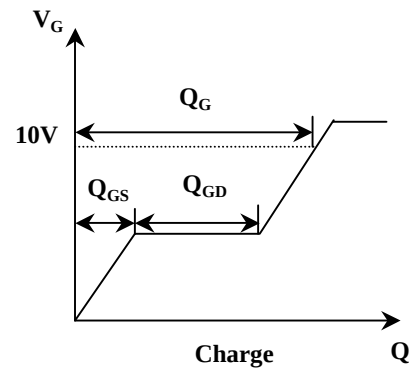
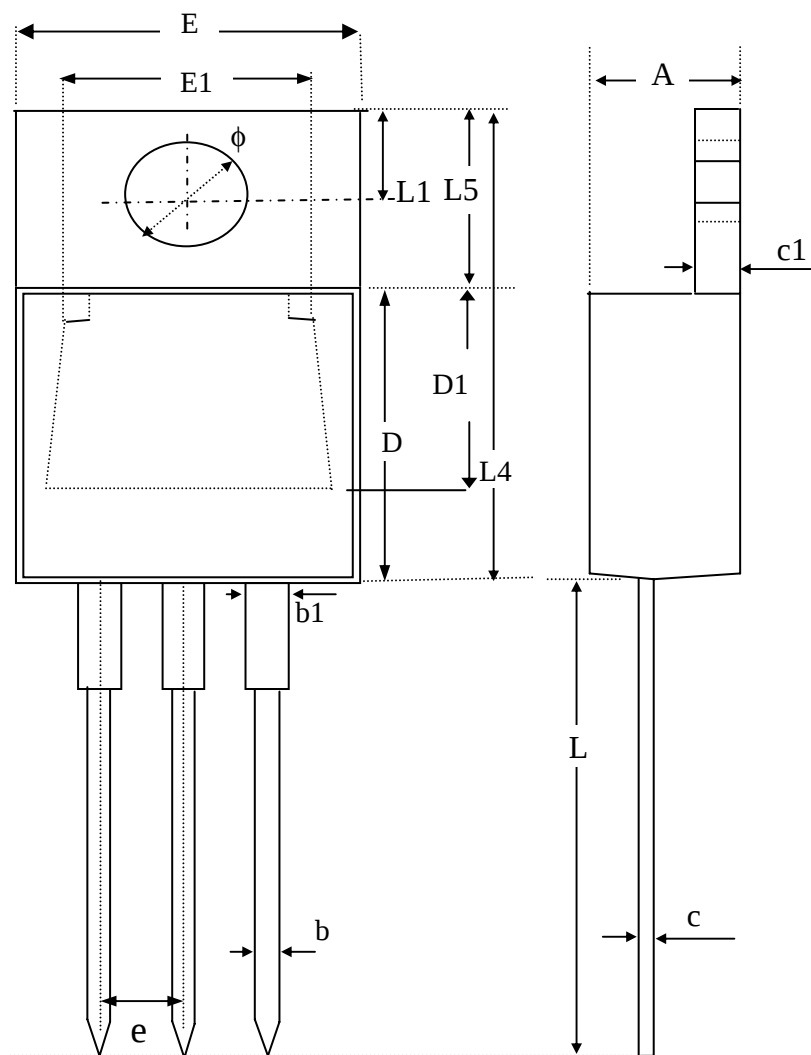


Fig 12. Gate Charge Waveform



Package Dimensions: TO-220



SYMBOLS	Millimeters		
	MIN	NOM	MAX
A	4.40	4.60	4.80
b	0.76	0.88	1.00
D	8.60	8.80	9.00
c	0.36	0.43	0.50
E	9.80	10.10	10.40
L4	14.70	15.00	15.30
L5	6.20	6.40	6.60
D1	5.10 REF.		
c1	1.25	1.35	1.45
b1	1.17	1.32	1.47
L	13.25	13.75	14.25
e	2.54 REF.		
L1	2.60	2.75	2.89
phi	3.71	3.84	3.96
E1	7.4 REF.		

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

Marking Information

