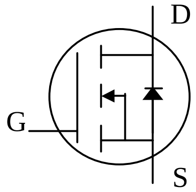
N-channel Enhancement-mode Power MOSFET

Simple Drive Requirement
100% Avalanche Tested
Fast Switching Performance
RoHS-compliant, halogen-free

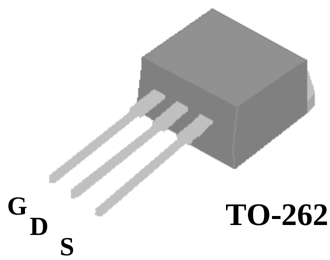


BV_{DSS}	100V
$R_{DS(ON)}$	9.5mΩ
I_D	85A

Description

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

The AP80T10GR-HF-3 is in the TO-262 package, which is widely used for commercial and industrial applications, and is well-suited for low voltage applications such as DC/DC converters and motor drives.



TO-262 (R)

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 (Chip)	85	A
I_D at T_C=25°C	Continuous Drain Current	80	A
I_D at T_C=100°C	Continuous Drain Current,	60	A
I_{DM}	Pulsed Drain Current[1]	300	A
P_D at T_C=25°C	Total Power Dissipation	166	W
T_{STG}	Storage Temperature Range	-55 to 175	°C
T_J	Operating Junction Temperature Range	-55 to 175	°C

Thermal Data

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

Ordering Information

AP80T10GR-HF-3TB **RoHS-compliant halogen-free TO-262, 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=40A	-	-	9.5	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	2	-	5	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=40A	-	75	-	S
I_{DSS}	Drain-Source Leakage Current (T_j=25°C)	V_{DS}=80V, V_{GS}=0V	-	-	25	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=±20V	-	-	±100	nA
Q_g	Total Gate Charge[2]	I_D=40A	-	115	180	nC
Q_{gs}	Gate-Source Charge	V_{DS}=80V	-	30	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=10V	-	48	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=50V	-	21	-	ns
t_r	Rise Time	I_D=30A	-	58	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=1Ω , V_{GS}=10V	-	41	-	ns
t_f	Fall Time	R_D=1.66Ω	-	15	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	6000	9600	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=40A, V_{GS}=0V	-	-	1.3	V
t_{rr}	Reverse Recovery Time[2]	I_S=10A, V_{GS}=0V,	-	75	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/µs	-	230	-	nC

Notes:

1.Pulse width limited by maximum junction temperature.

2.Pulse test - pulse width ≤ 300µs , duty cycle ≤ 2%

3. Package limitated current is 80A

Typical Electrical Characteristics

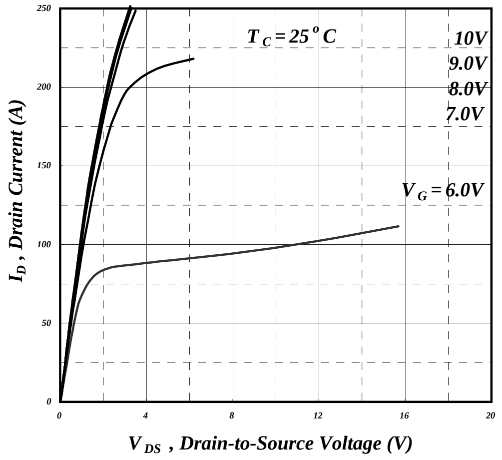


Fig 1. Typical Output Characteristics

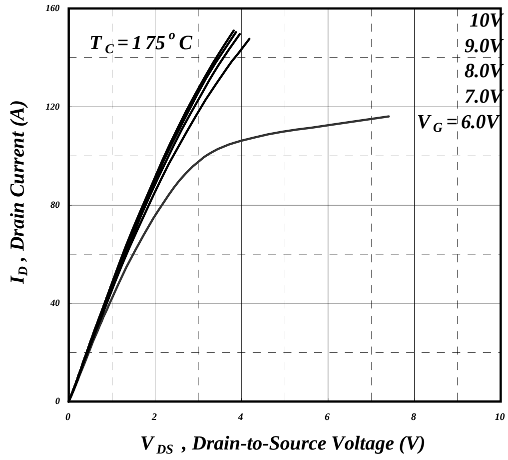


Fig 2. Typical Output Characteristics

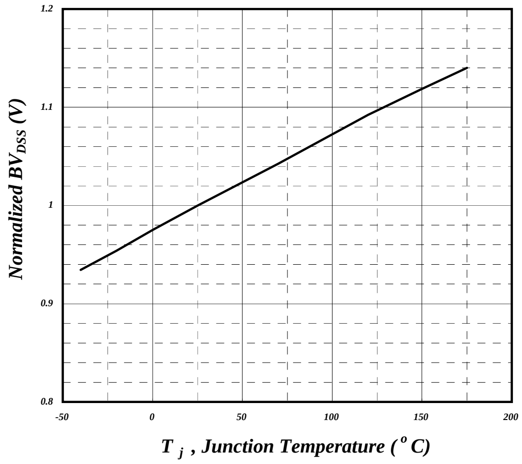


Fig 3. Normalized BVDSS
vs. Junction Temperature

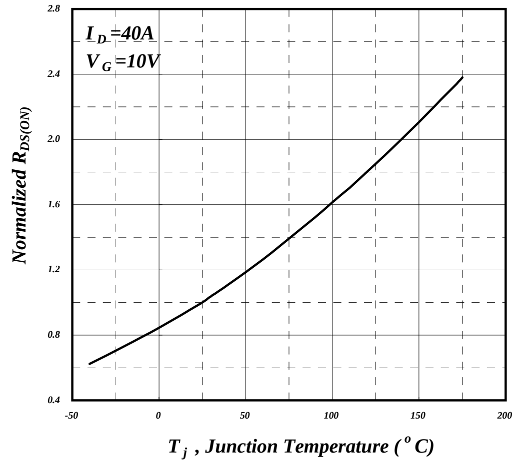


Fig 4. Normalized On-Resistance
vs. Junction Temperature

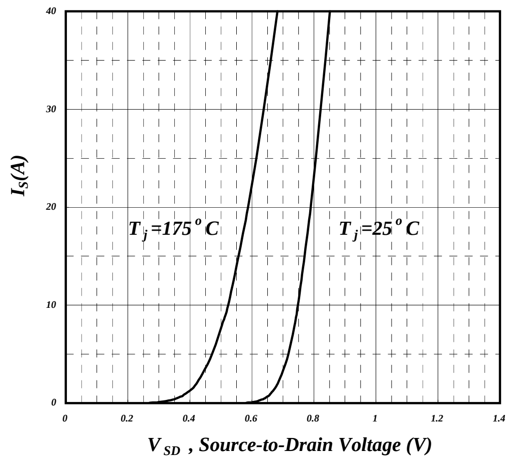


Fig 5. Forward Characteristic of
Reverse Diode

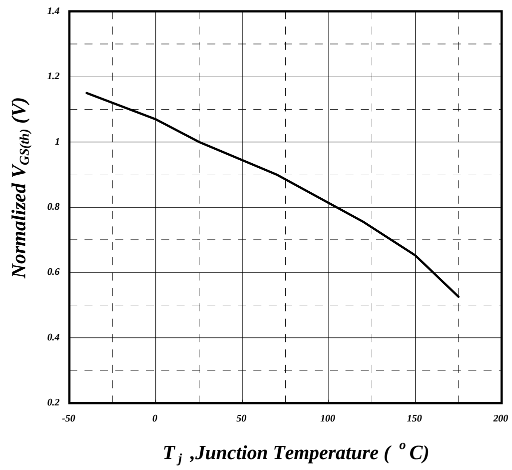


Fig 6. Gate Threshold Voltage vs.
Junction Temperature

Typical Electrical Characteristics (cont.)

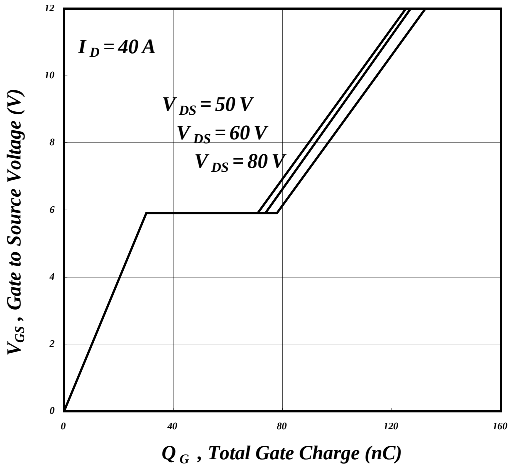


Fig 7. Gate Charge Characteristics

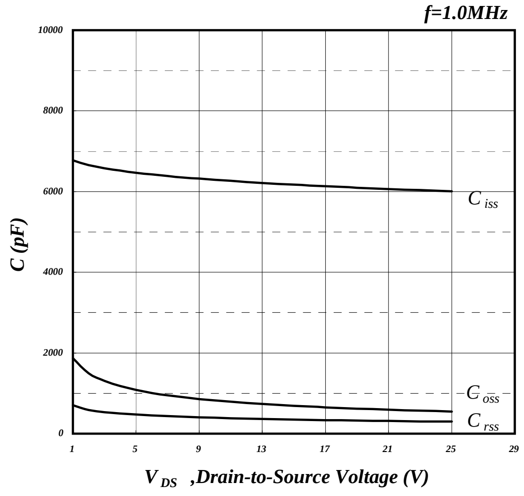


Fig 8. Typical Capacitance Characteristics

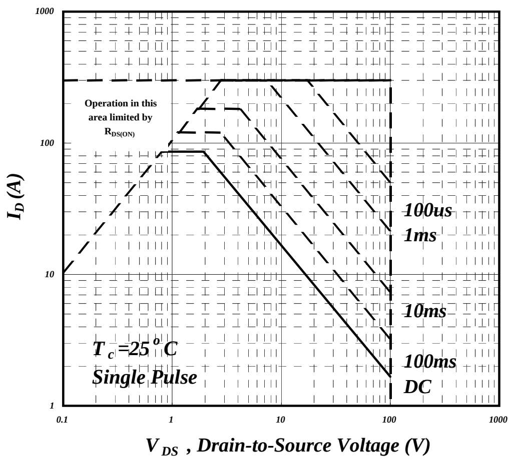


Fig 9. Maximum Safe Operating Area

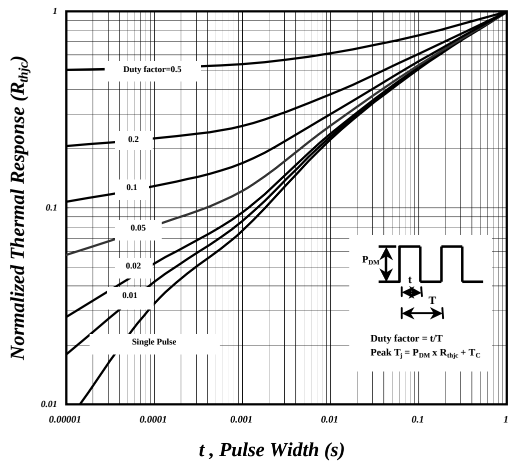


Fig 10. Effective Transient Thermal Impedance

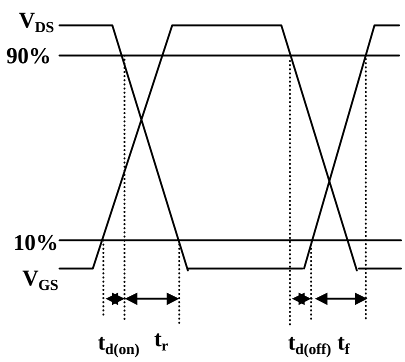


Fig 11. Switching Time Waveform

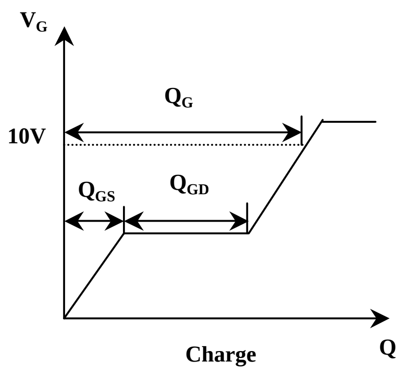
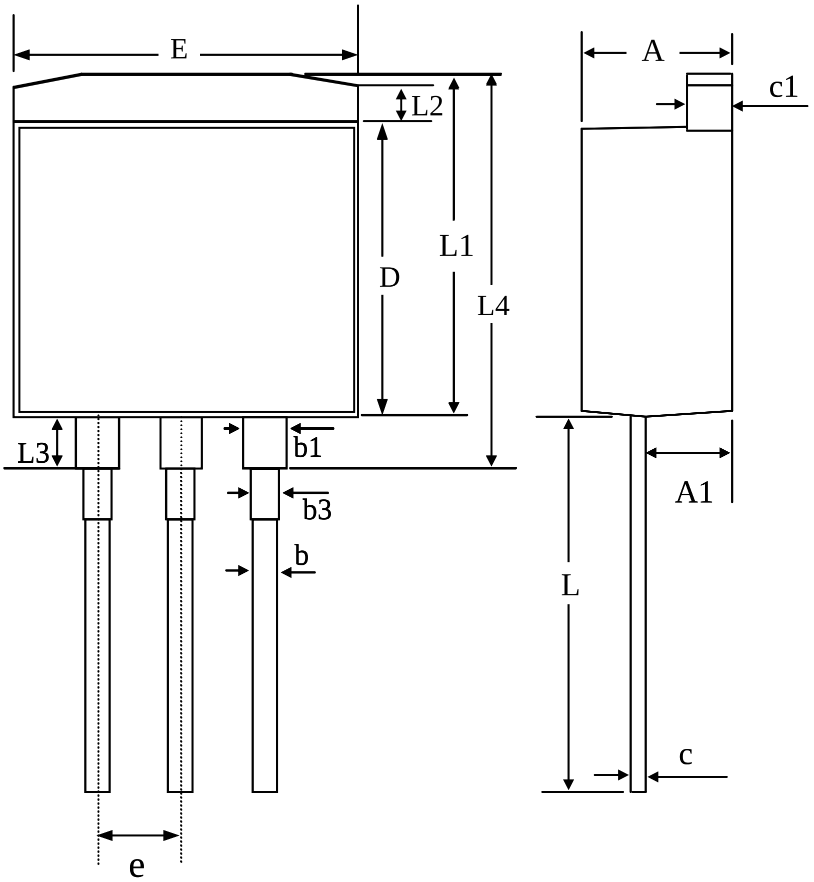


Fig 12. Gate Charge Waveform

Package Dimensions: TO-262

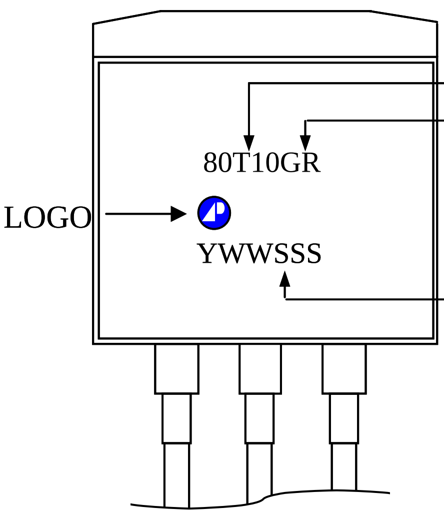


SYMBOLS	Millimeters		
	MIN	NOM	MAX
A	4.24	4.44	4.64
A1	-----	-----	2.70
b	0.66	0.76	0.86
b1	1.07	1.27	1.47
b3	0.76	0.86	1.06
c	0.30	0.40	0.50
c1	1.15	1.30	1.45
D	8.30	8.60	8.90
E	9.90	10.20	10.50
e	2.04	2.54	3.04
L	10.50	11.00	11.50
L1	9.50	10.00	10.30
L3	----	1.30	----
L4	10.80	11.30	11.35

1.All Dimensions Are in Millimeters.

2.Dimension Does Not Include Mold Protrusions.

Marking Information: TO-262



Product: AP80T10

Package Code
GR = RoHS-compliant halogen-free TO-262

Date/lot code (YWWSSS)
Y: Last digit of the year
WW: Work week
SSS: Lot code sequence