



Advanced Power
Electronics Corp.

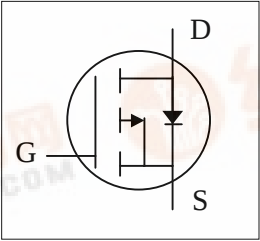
AP3310GH/J

RoHS-compliant Product

P-CHANNEL ENHANCEMENT MODE

POWER MOSFET

- ▼ Simple Drive Requirement
- ▼ 2.5V Gate Drive Capability
- ▼ Fast Switching Characteristic

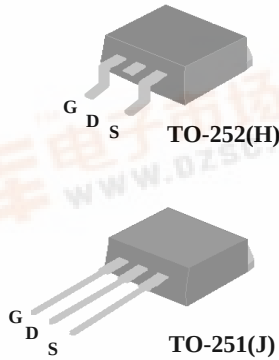


BV_{DS}	-20V
$R_{DS(ON)}$	150m Ω
I_D	-10A

Description

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

This device is suited for low voltage and lower power applications.

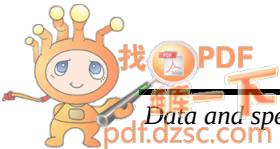


Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	- 20	V
V_{GS}	Gate-Source Voltage	± 12	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current, V_{GS} @ 10V	-10	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current, V_{GS} @ 10V	-6.2	A
I_{DM}	Pulsed Drain Current ¹	-24	A
$P_D@T_C=25^{\circ}C$	Total Power Dissipation	15.6	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	8.0	$^{\circ}C/W$
Rthj-a	Maximum Thermal Resistance, Junction-ambient	110	$^{\circ}C/W$





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Electrical Characteristics@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	-20	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-4.5V, I _D =-2.8A	-	-	150	mΩ
		V _{GS} =-2.5V, I _D =-2.0A	-	-	250	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	-0.5	-	-	V
g _{fs}	Forward Transconductance	V _{DS} =-5V, I _D =-2.8A	-	2.8	-	S
I _{DSS}	Drain-Source Leakage Current (T _j =25°C)	V _{DS} =-20V, V _{GS} =0V	-	-	-1	uA
	Drain-Source Leakage Current (T _j =150°C)	V _{DS} =-16V, V _{GS} =0V	-	-	-25	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±12V	-	-	±100	nA
Q _g	Total Gate Charge ²	I _D =-2.8A	-	4.2	-	nC
Q _{gs}	Gate-Source Charge	V _{DS} =-6V	-	1.2	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =-5V	-	0.4	-	nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =-6V	-	7	-	ns
t _r	Rise Time	I _D =-1A	-	8	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =6Ω, V _{GS} =-5V	-	13	-	ns
t _f	Fall Time	R _D =6Ω	-	5	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	320	-	pF
C _{oss}	Output Capacitance	V _{DS} =-6V	-	75	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	55	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	T _j =25°C, I _S =-10A, V _{GS} =0V	-	-	-1.2	V
t _{rr}	Reverse Recovery Time ²	I _S =-2.8A, V _{GS} =0V,	-	17	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	9	-	nC

Notes:

- 1.Pulse width limited by Maximum junction temperature.
- 2.Pulse test

THIS PRODUCT IS AN ELECTROSTATIC SENSITIVE, PLEASE HANDLE WITH CAUTION.

THIS PRODUCT HAS BEEN QUALIFIED FOR CONSUMER MARKET. APPLICATIONS OR USES AS CRITICAL COMPONENT IN LIFE SUPPORT DEVICE OR SYSTEM ARE NOT AUTHORIZED.

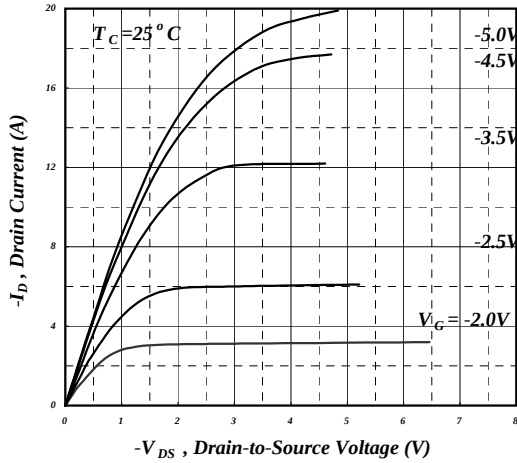


Fig 1. Typical Output Characteristics

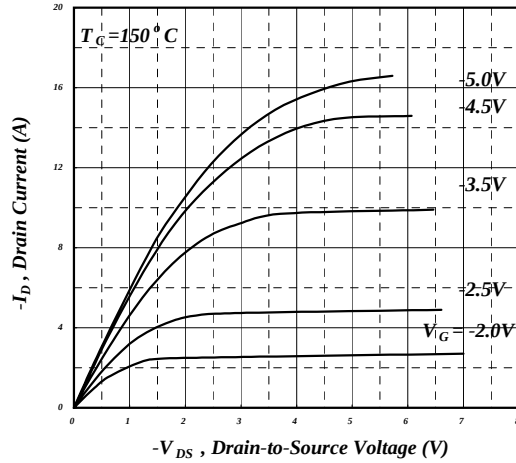


Fig 2. Typical Output Characteristics

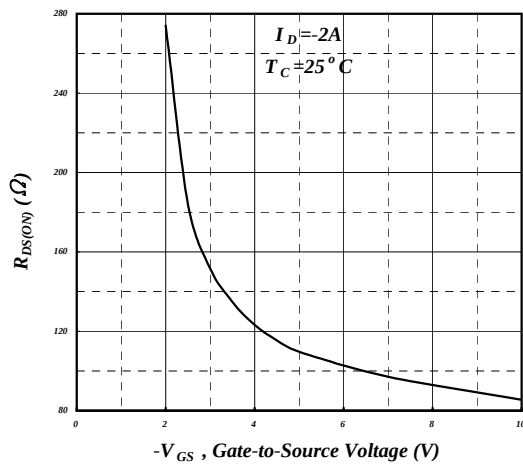


Fig 3. On-Resistance v.s. Gate Voltage

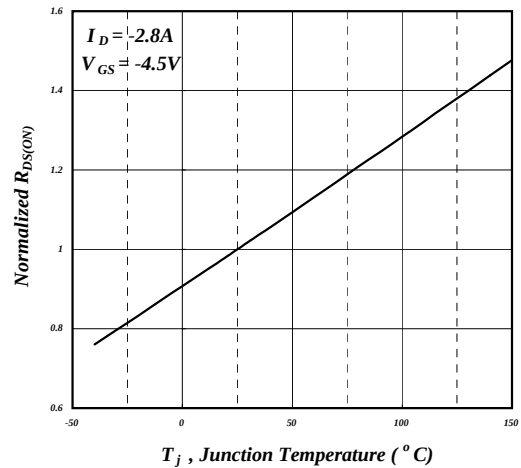


Fig 4. Normalized On-Resistance v.s. Junction Temperature

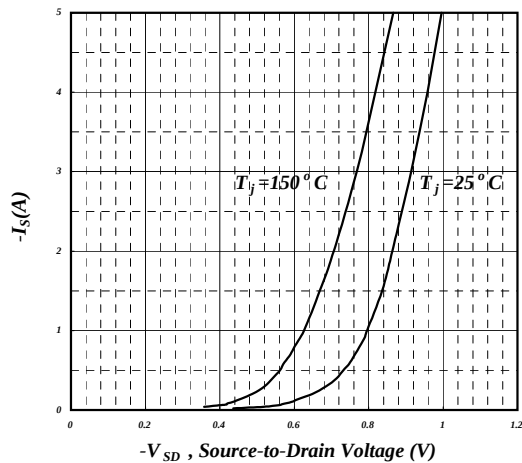


Fig 5. Forward Characteristic of Reverse Diode

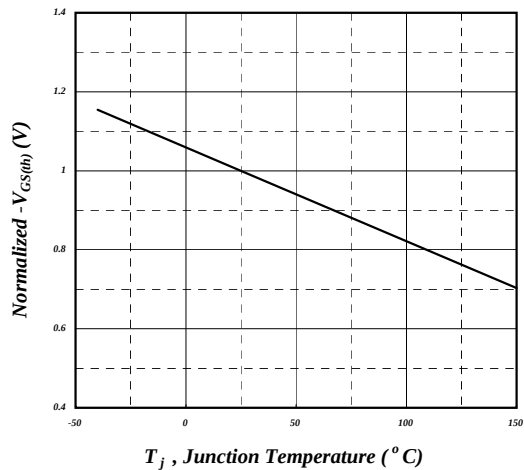


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

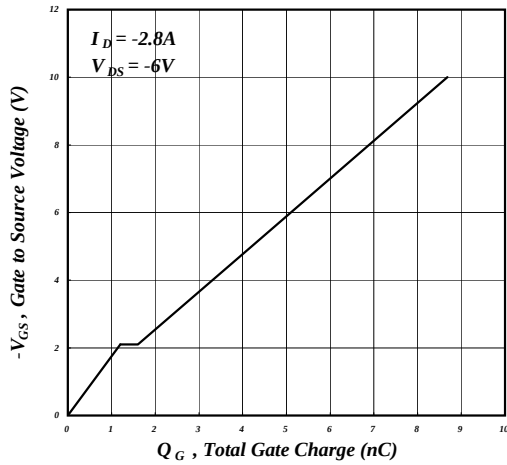


Fig 7. Gate Charge Characteristics

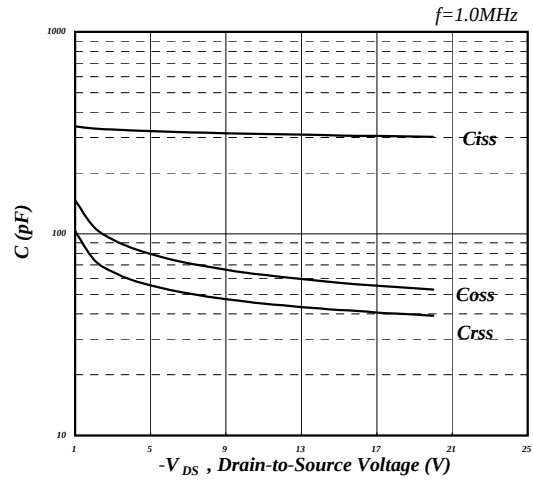


Fig 8. Typical Capacitance Characteristics

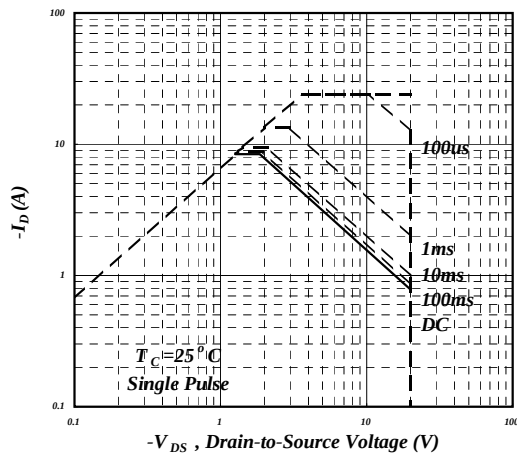


Fig 9. Maximum Safe Operating Area

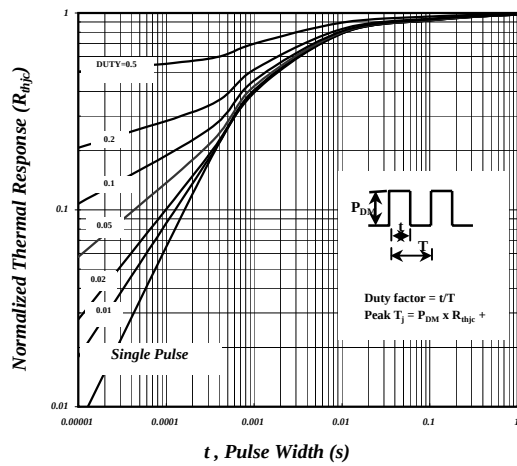


Fig 10. Effective Transient Thermal Impedance

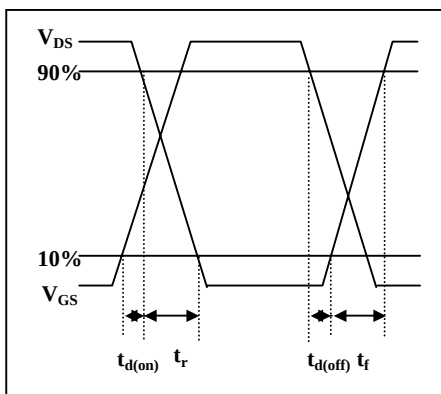


Fig 11. Switching Time Waveform

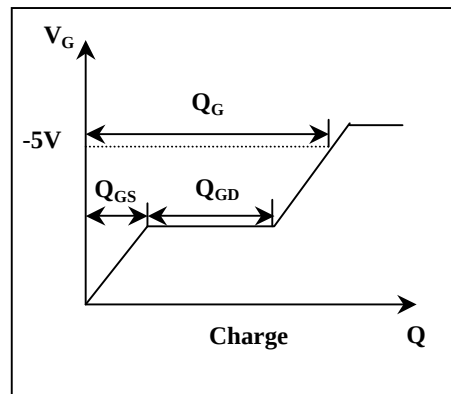
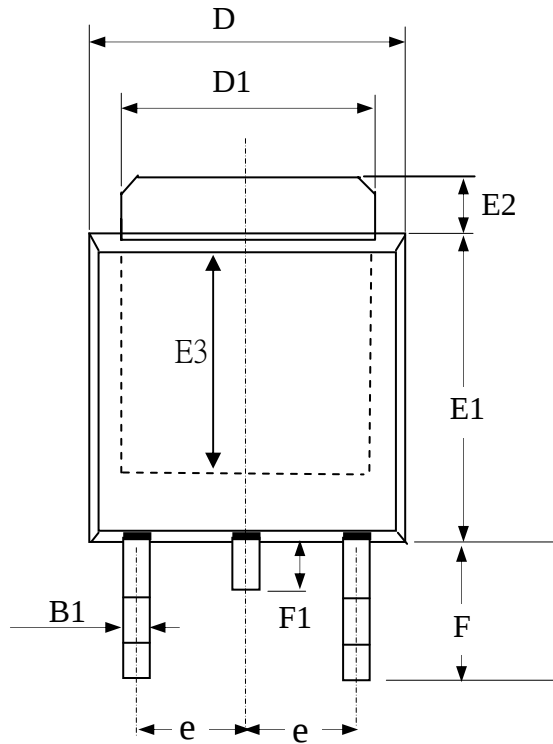


Fig 12. Gate Charge Waveform



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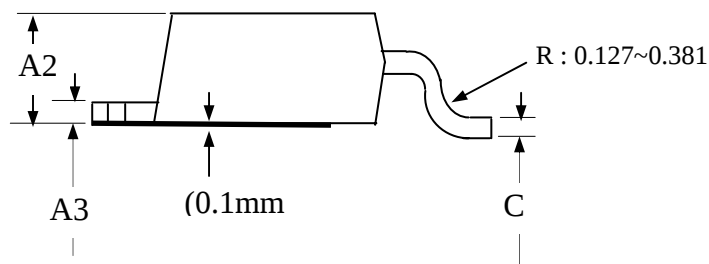
Package Outline : TO-252



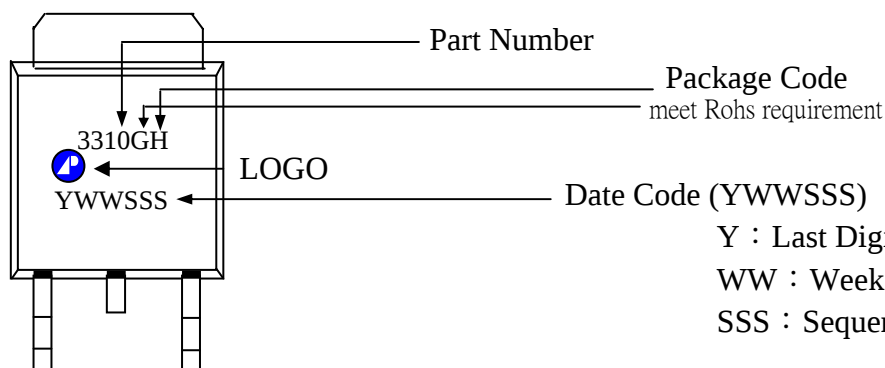
SYMBOLS	Millimeters		
	MIN	NOM	MAX
A2	1.80	2.30	2.80
A3	0.40	0.50	0.60
B1	0.40	0.70	1.00
D	6.00	6.50	7.00
D1	4.80	5.35	5.90
E3	3.50	4.00	4.50
F	2.20	2.63	3.05
F1	0.5	0.85	1.20
E1	5.10	5.70	6.30
E2	0.50	1.10	1.80
e	--	2.30	--
C	0.35	0.50	0.65

1.All Dimensions Are in Millimeters.

2.Dimension Does Not Include Mold Protrusions.



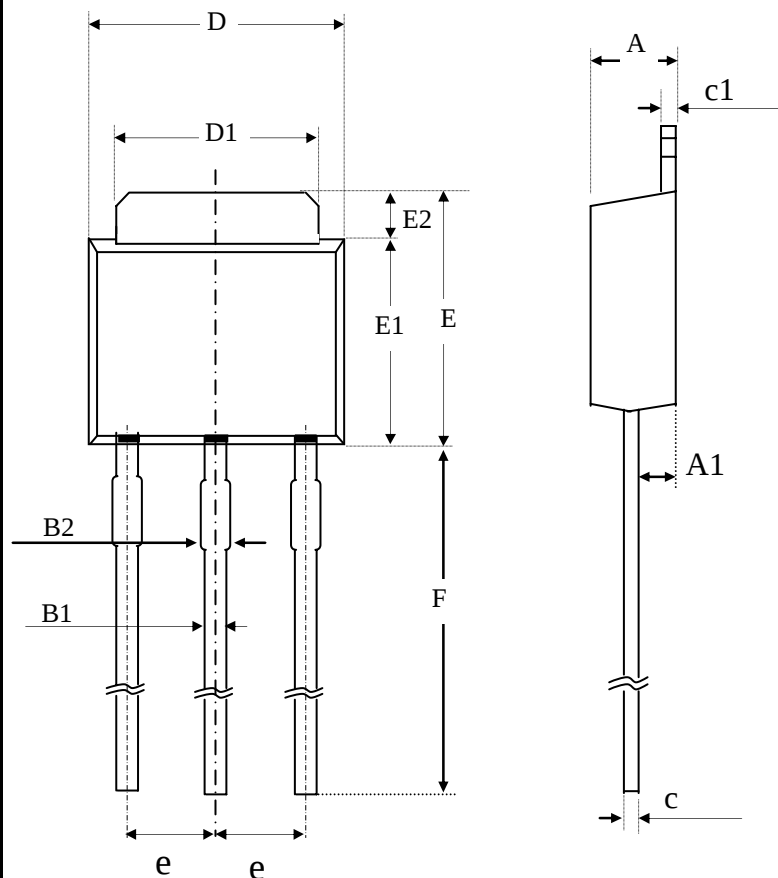
Part Marking Information & Packing : TO-252



Y : Last Digit Of The Year
WW : Week
SSS : Sequence



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SYMBOLS	Millimeters		
	MIN	NOM	MAX
	Original	Original	Original
A	2.10	2.30	2.50
A1	0.60	1.20	1.80
B1	0.40	0.60	0.80
B2	0.60	0.95	1.25
c	0.40	0.50	0.65
c1	0.40	0.55	0.70
D	6.00	6.50	7.00
D1	4.80	5.40	5.90
E1	5.00	5.50	6.00
E2	1.20	1.70	2.20
e	----	2.30	----
F	7.00	---	16.70

- 1.All Dimensions Are in Millimeters.
- 2.Dimension Does Not Include Mold Protrusions.

Part Marking Information & Packing : TO-251

