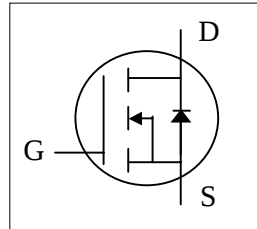




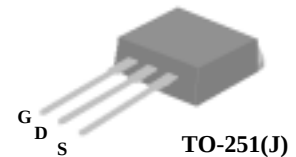
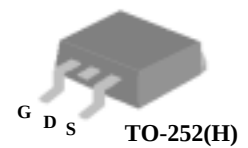
- ▼ Low Gate Charge
- ▼ Simple Drive Requirement
- ▼ Fast Switching



BV_{DSS}	25V
$R_{DS(ON)}$	50m Ω
I_D	16A

Description

The TO-252 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters. The through-hole version (AP3302J) is available for low-profile applications.



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	25	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10V	16	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10V	10	A
I_{DM}	Pulsed Drain Current ¹	25	A
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	20	W
	Linear Derating Factor	0.16	W/ $^\circ\text{C}$
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-case	Thermal Resistance Junction-case Max.	6.4	$^\circ\text{C}/\text{W}$
Rthj-amb	Thermal Resistance Junction-ambient Max.	110	$^\circ\text{C}/\text{W}$



AP3302H/J

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	25	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =8A	-	-	50	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	2	-	4	V
I _{DSS}	Drain-Source Leakage Current (T _j =25°C)	V _{DS} =25V, V _{GS} =0V	-	-	1	uA
	Drain-Source Leakage Current (T _j =150°C)	V _{DS} =20V, V _{GS} =0V	-	-	25	uA
I _{GSS}	Gate-Source Leakage	V _{GS} = ± 20V	-	-	±100	nA
Q _g	Total Gate Charge ²	I _D =10A	-	7.4	13	nC
Q _{gs}	Gate-Source Charge	V _{DS} = 24V	-	2.2	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =10V	-	4.2	-	nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =15V	-	8	-	ns
t _r	Rise Time	I _D =16A	-	7.4	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω, V _{GS} =10V	-	11	-	ns
t _f	Fall Time	R _D =0.94Ω	-	3	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	164	290	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	158	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	62	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =16A, V _{GS} =0V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _S =16A, V _{GS} =0V,	-	29	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	21	-	nC

Notes:

- 1.Pulse width limited by safe operating area.
- 2.Pulse width ≤300us , duty cycle ≤2%.

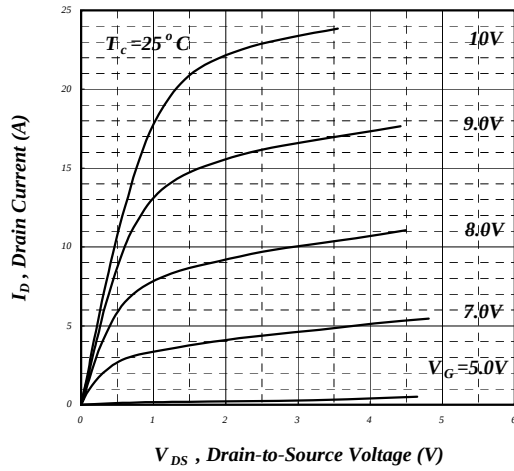


Fig 1. Typical Output Characteristics

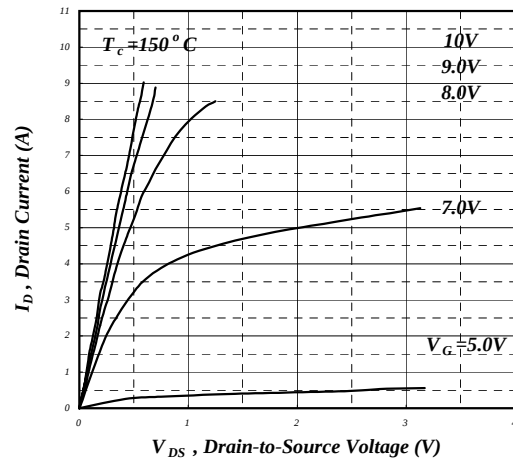


Fig 2. Typical Output Characteristics

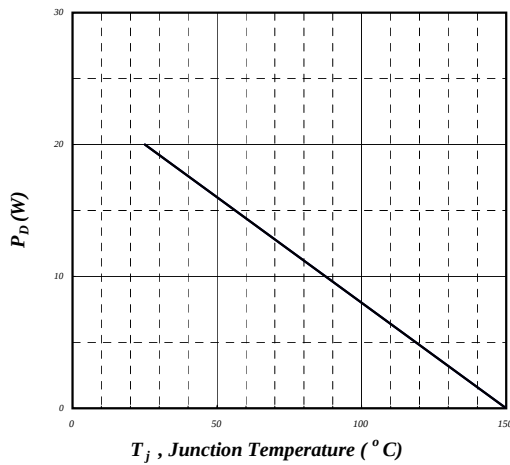


Fig 3. On-Resistance v.s. Gate Voltage

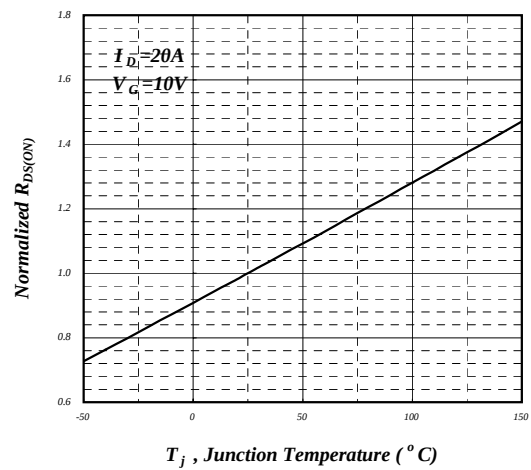


Fig 4. Normalized On-Resistance v.s. Junction Temperature

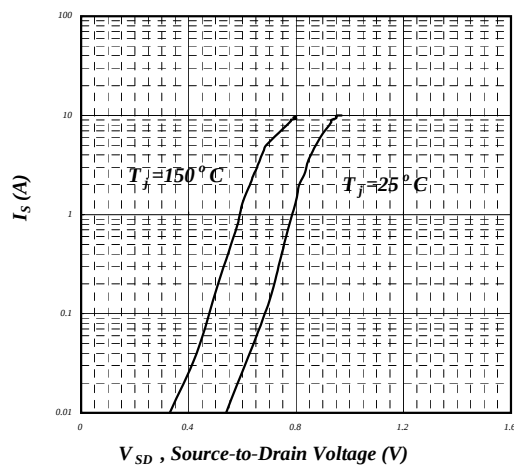


Fig 5. Forward Characteristic of Reverse Diode

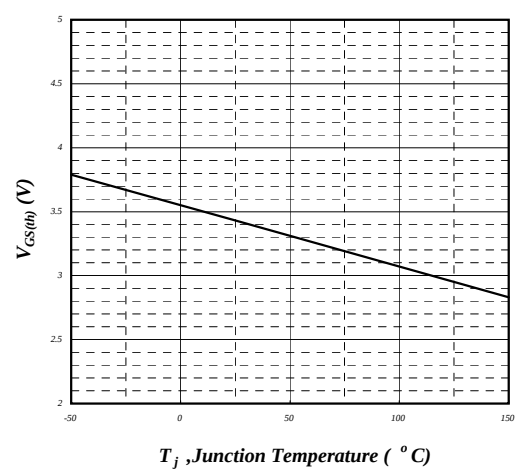


Fig 6. Gate Threshold Voltage v.s. Junction Temperature



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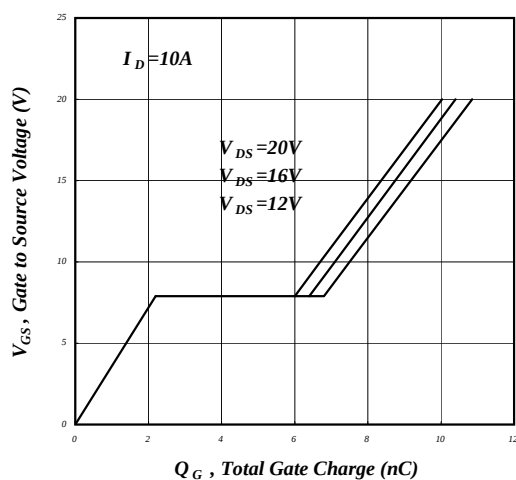


Fig7. Gate Charge Characteristics

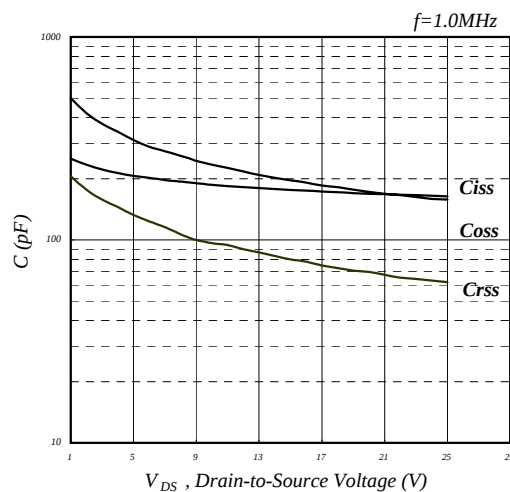


Fig 8. Typical Capacitance Characteristics

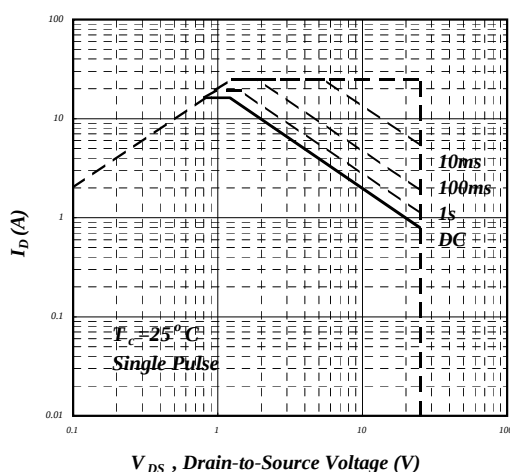


Fig 9. Maximum Safe Operating Area

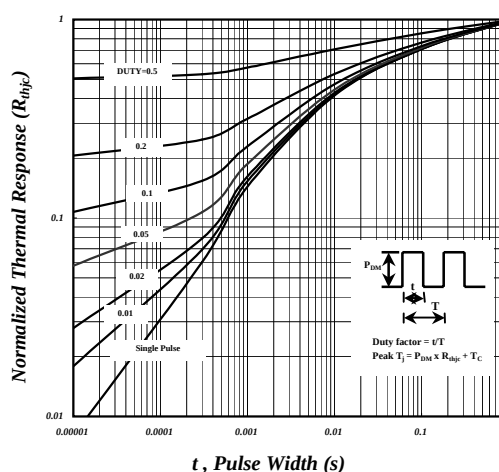


Fig 10. Effective Transient Thermal Impedance

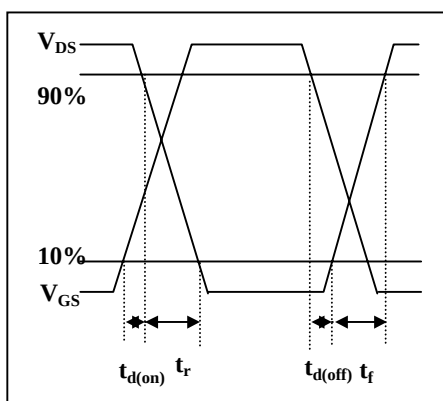


Fig 11. Switching Time Waveform

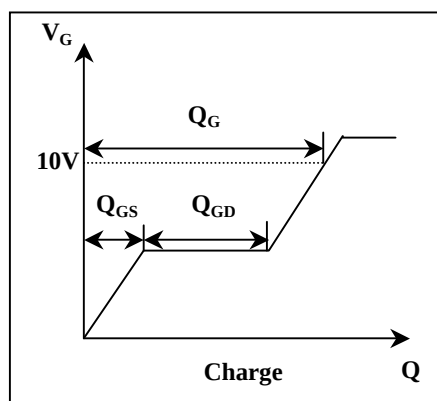


Fig 12. Gate Charge Waveform