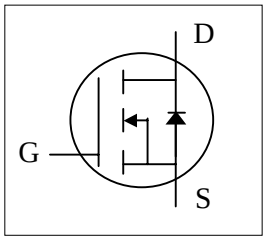
Advanced Power Electronics Corp.

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

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

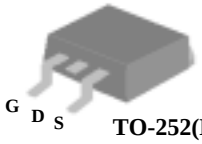
www.DataSheet4U.com



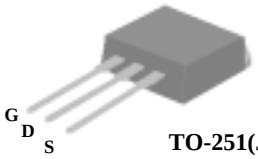
BV_{DSS}	25V
$R_{DS(ON)}$	25mΩ
I_D	28A

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 (AP3303J) is available for low-profile applications.



TO-252(H)



TO-251(J)

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℃	Continuous Drain Current, V_{GS} @ 10V	28	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V	18	A
I_{DM}	Pulsed Drain Current[1]	130	A
P_D@T_C=25℃	Total Power Dissipation	31	W
	Linear Derating Factor	0.25	W/℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter		Value	Unit
Rthj-case	Thermal Resistance Junction-case	Max.	4.0	℃/W
Rthj-amb	Thermal Resistance Junction-ambient	Max.	110	℃/W

www.DataSheet4U.com

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
$\Delta BV_{DSS}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to 25℃, I_D=1mA	-	0.02	-	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=20A	-	-	25	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	2	-	4	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=20A	-	20	-	S
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	-	-	100	uA
I_{GSS}	Gate-Source Leakage	V_{GS}= ± 20V	-	-	±100	nA
Q_g	Total Gate Charge[2]	I_D=20A	-	14.5	24	nC
Q_{gs}	Gate-Source Charge	V_{DS}= 20V	-	3	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=10V	-	8.5	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=15V	-	8.8	-	ns
t_r	Rise Time	I_D=20A	-	65	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω,V_{GS}=10V	-	11	-	ns
t_f	Fall Time	R_D=0.75Ω	-	7	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	340	540	pF
C_{oss}	Output Capacitance	V_{DS}=25V	-	250	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	98	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=20A, V_{GS}=0V	-	-	1.5	V
trr	Reverse Recovery Time	I_S=20A, V_{GS}=0V,	-	30.5	-	ns
Qrr	Reverse Recovery Charge	dI/dt=100A/μs	-	29	-	nC

Notes:

1.Pulse width limited by safe operating area.

2.Pulse width ≤300us , duty cycle ≤2%.

www.DataSheet4U.com

www.DataSheet4U.com

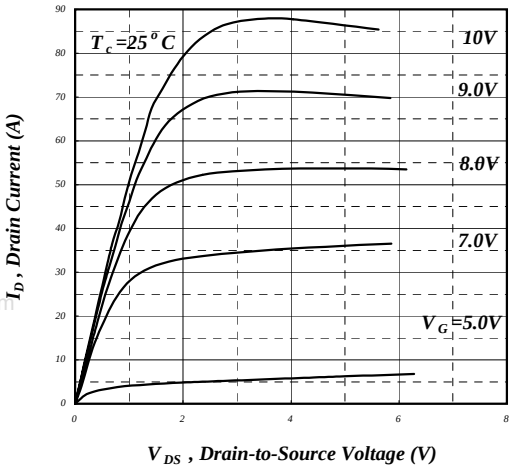


Fig 1. Typical Output Characteristics

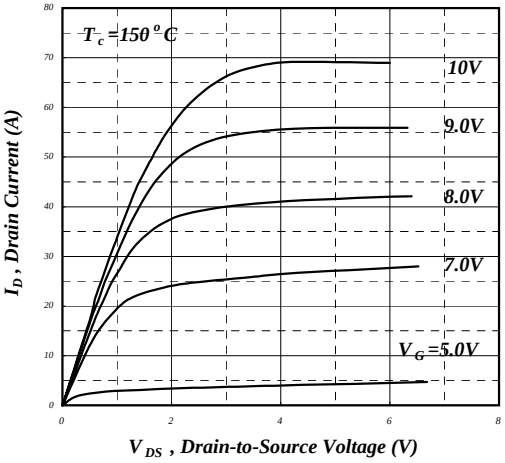


Fig 2. Typical Output Characteristics

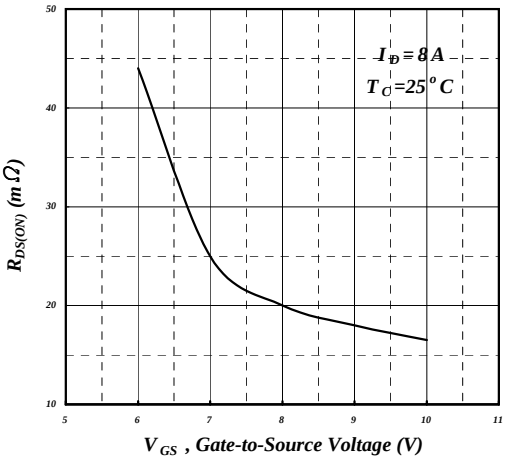


Fig 3. On-Resistance v.s. Gate Voltage

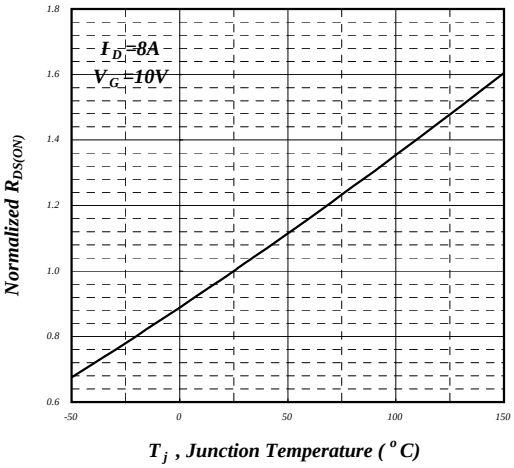


Fig 4. Normalized On-Resistance v.s. Junction Temperature

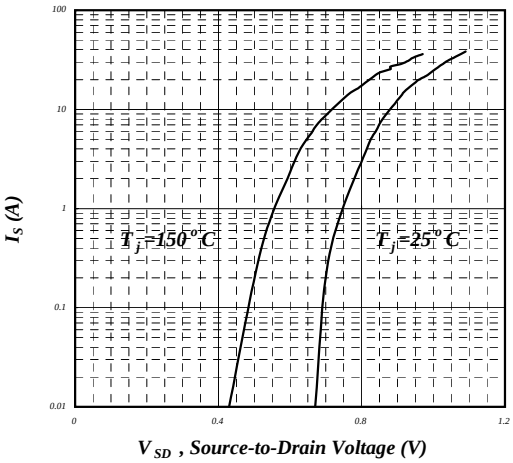


Fig 5. Forward Characteristic of Reverse Diode

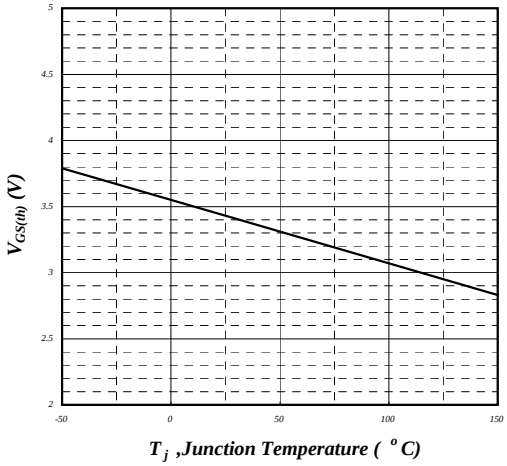
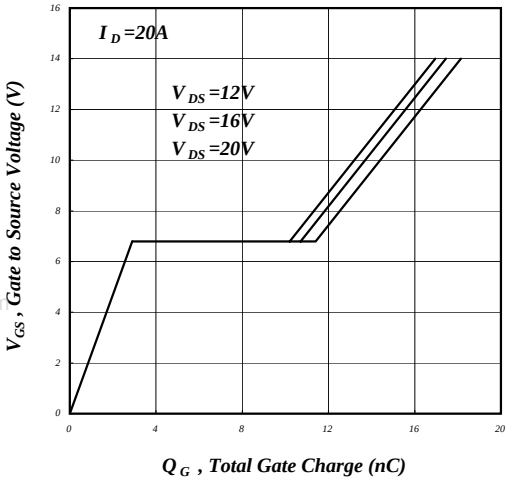


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

www.DataSheet4U.com



www.DataSheet4U.com

Fig7. Gate Charge Characteristics

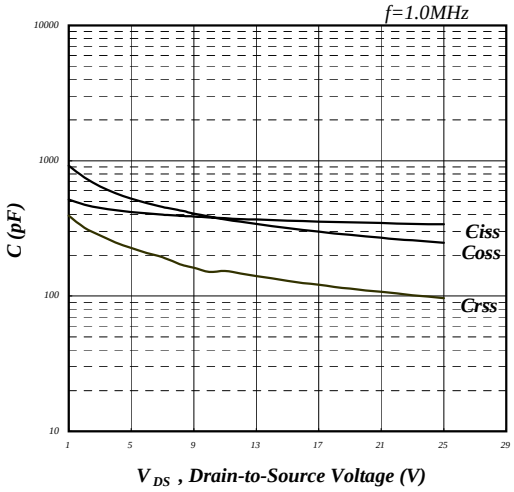


Fig 8. Typical Capacitance Characteristics

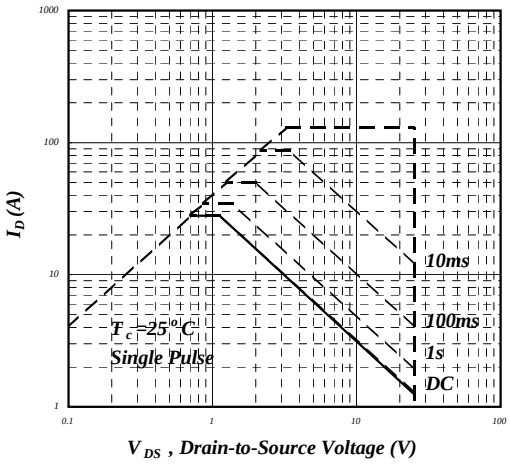


Fig 9. Maximum Safe Operating Area

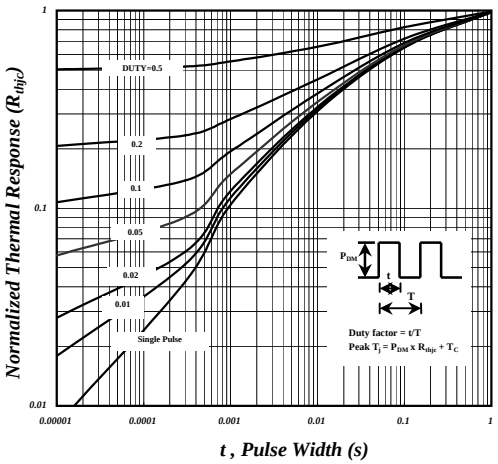


Fig 10. Effective Transient Thermal Impedance

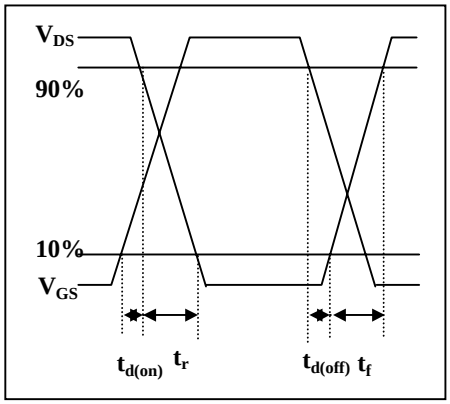


Fig 11. Switching Time Waveform

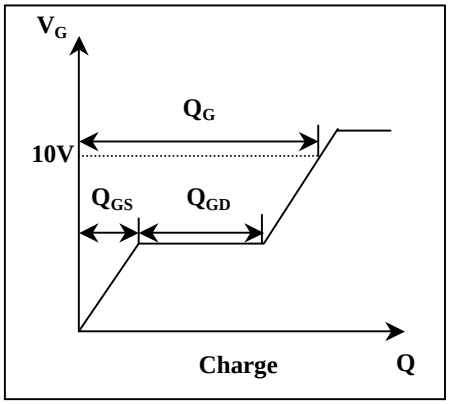


Fig 12. Gate Charge Waveform

www.DataSheet4U.com