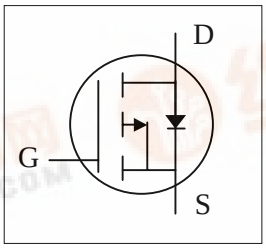
AP3403H/J

Advanced Power Electronics Corp.

P-CHANNEL ENHANCEMENT MODE POWER MOSFET

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

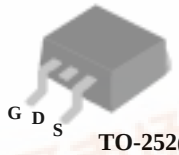


BV_{DSS}	-30V
$R_{DS(ON)}$	200mΩ
I_D	- 10A

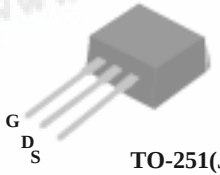
Description

Advanced Power MOSFETs utilized advanced processing techniques to achieve the lowest possible on-resistance, extremely efficient and cost-effectiveness device.

The TO-252/TO-251 package is universally used for all commercial-industrial application.



TO-252(H)



TO-251(J)

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	- 30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D@T_A=25℃	Continuous Drain Current	-10	A
I_D@T_A=70℃	Continuous Drain Current	-8.6	A
I_{DM}	Pulsed Drain Current[1]	-48	A
P_D@T_A=25℃	Total Power Dissipation	36.7	W
	Linear Derating Factor	0.29	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.	3.4	℃/W
Rthj-amb	Thermal Resistance Junction-ambient	Max.	110	℃/W

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	-30	-	-	V
$\Delta BV_{DSS}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to 25℃, I_D=-1mA	-	-0.1	-	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=-10V, I_D=-6A	-	-	200	mΩ
		V_{GS}=-4.5V, I_D=-4A	-	-	400	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	-1	-	-3	V
g_{fs}	Forward Transconductance	V_{DS}=-10V, I_D=-6A	-	2	-	S
I_{DSS}	Drain-Source Leakage Current (T_j=25°C)	V_{DS}=-30V, V_{GS}=0V	-	-	-1	uA
	Drain-Source Leakage Current (T_j=150°C)	V_{DS}=-24V, V_{GS}=0V	-	-	-25	uA
I_{GSS}	Gate-Source Leakage	V_{GS}= ± 20V	-	-	±100	nA
Q_g	Total Gate Charge[2]	I_D=-6A	-	3.8	-	nC
Q_{gs}	Gate-Source Charge	V_{DS}=-15V	-	1.7	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=-4.5V	-	1.6	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=-15V	-	6.7	-	ns
t_r	Rise Time	I_D=-6A	-	20.8	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=2Ω,V_{GS}=-10V	-	14.9	-	ns
t_f	Fall Time	R_D=2.5Ω	-	4.4	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	217	-	pF
C_{oss}	Output Capacitance	V_{DS}=-25V	-	103	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	31	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=-1.25A, V_{GS}=0V	-	-	-1.2	V
trr	Reverse Recovery Time	I_S=-6A, V_{GS}=0V,	-	35	-	ns
Qrr	Reverse Recovery Charge	dI/dt=-100A/μs	-	63	-	nC

Notes:

1.Pulse width limited by Max. junction temperature.

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

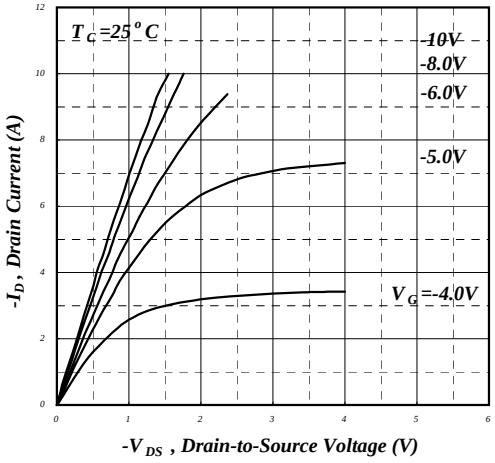


Fig 1. Typical Output Characteristics

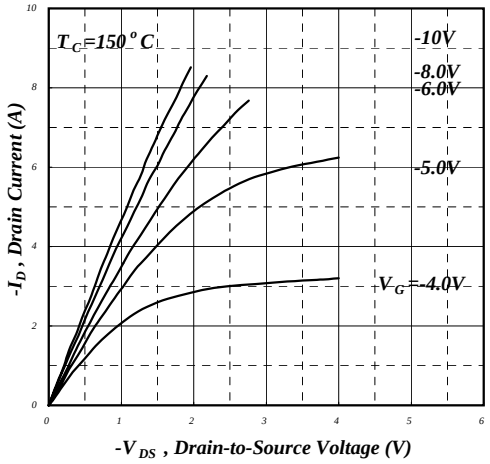


Fig 2. Typical Output Characteristics

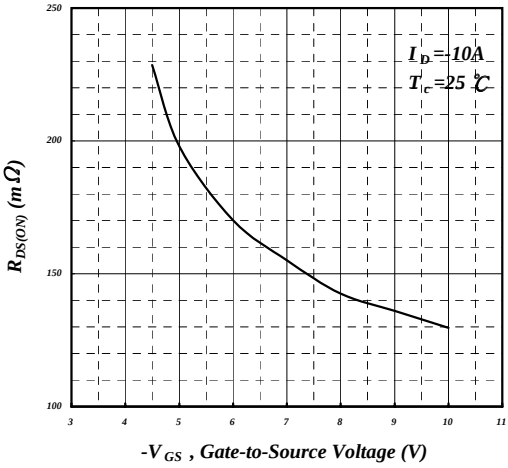


Fig 3. On-Resistance v.s. Gate Voltage

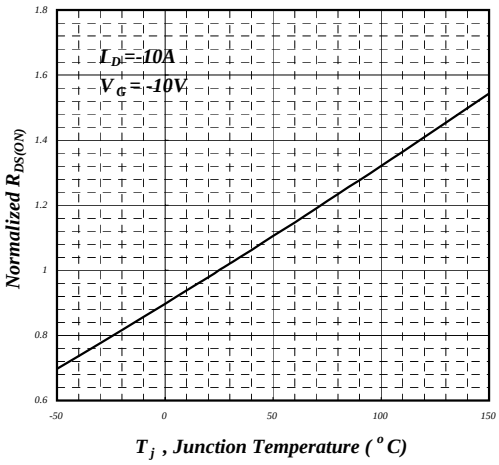


Fig 4. Normalized On-Resistance v.s. Junction Temperature

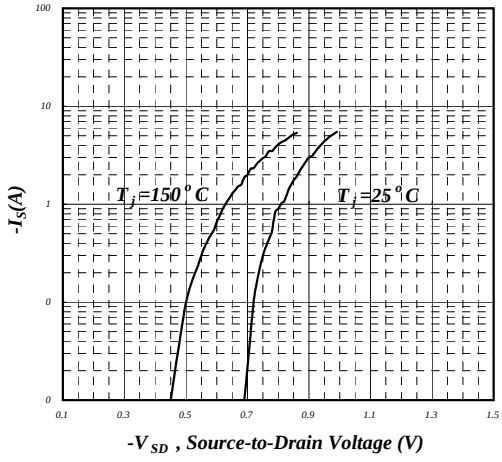


Fig5. Forward Characteristic of Reverse Diode

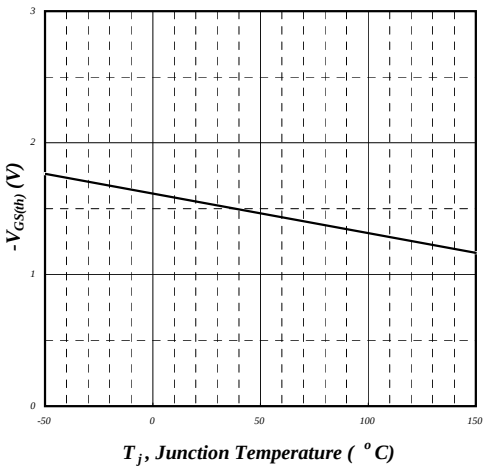


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

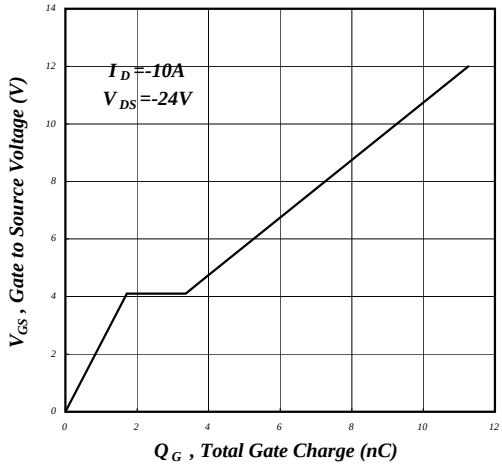


Fig 7. Gate Charge Characteristics

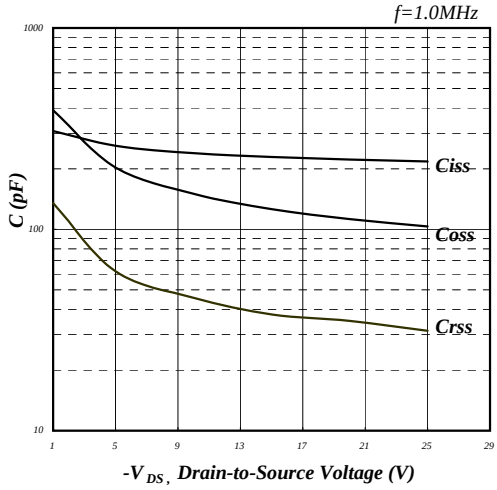


Fig 8. Typical Capacitance Characteristics

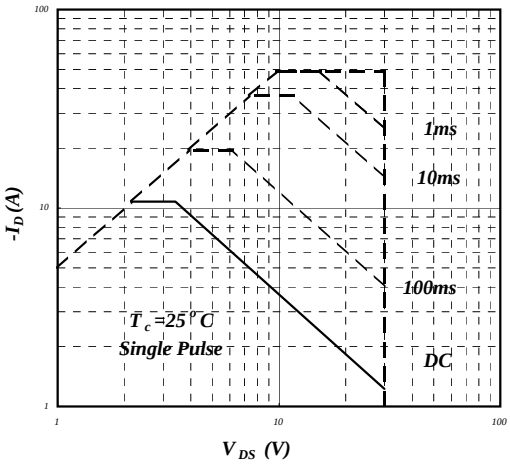


Fig 9. Maximum Safe Operating Area

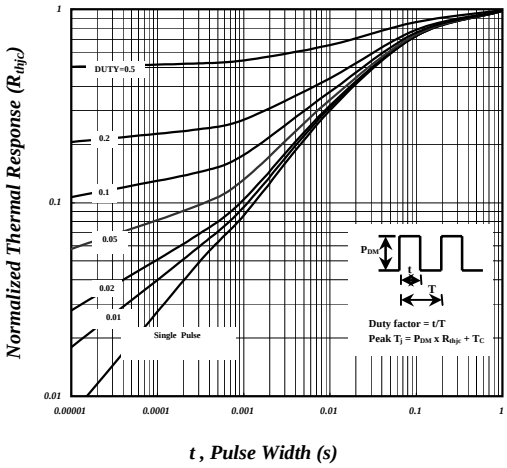


Fig 10. Effective Transient Thermal Impedance

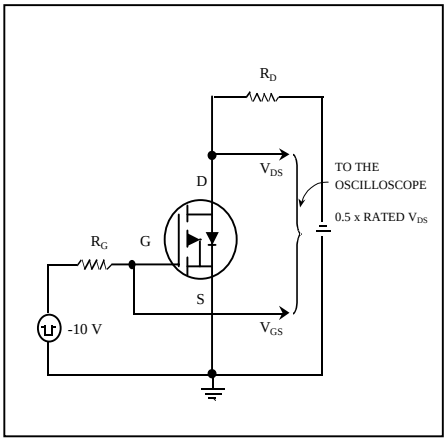


Fig11. Switching Time Circuit

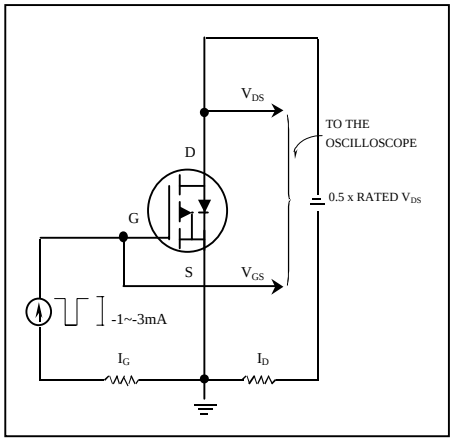


Fig 12. Gate Charge Circuit