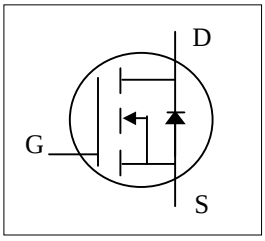
Advanced Power Electronics Corp.

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

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

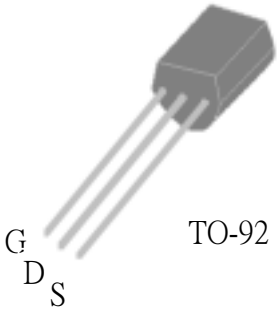


BV_{DSS}	600V
$R_{DS(ON)}$	12Ω
I_D	160mA

Description

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

The TO-92 package is universally used for all commercial-industrial applications.



TO-92

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	600	V
V_{GS}	Gate-Source Voltage	± 30	V
I_D@T_A=25℃	Continuous Drain Current, V_{GS} @ 10V	160	mA
I_D@T_A=100℃	Continuous Drain Current, V_{GS} @ 10V	100	mA
I_{DM}	Pulsed Drain Current[1]	300	mA
P_D@T_C=25℃	Total Power Dissipation	0.83	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-a	Thermal Resistance Junction-ambient	Max.	150	℃/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=1mA	600	-	-	V
$\Delta BV_{DSS}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to 25℃, I_D=1mA	-	0.8	-	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=0.5A	-	-	12	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	2	-	4	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=0.5A	-	0.8	-	S
I_{DSS}	Drain-Source Leakage Current (T_j=25°C)	V_{DS}=600V, V_{GS}=0V	-	-	10	uA
	Drain-Source Leakage Current (T_j=150°C)	V_{DS}=480V, V_{GS}=0V	-	-	100	uA
I_{GSS}	Gate-Source Leakage	V_{GS}= ± 30V	-	-	±100	nA
Q_g	Total Gate Charge[3]	I_D=1A	-	4.0	-	nC
Q_{gs}	Gate-Source Charge	V_{DS}=480V	-	1.0	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=10V	-	1.1	-	nC
$t_{d(on)}$	Turn-on Delay Time[3]	V_{DD}=300V	-	6.6	-	ns
t_r	Rise Time	I_D=1A	-	5.0	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω,V_{GS}=10V	-	11.7	-	ns
t_f	Fall Time	R_D=300Ω	-	9.2	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	170	-	pF
C_{oss}	Output Capacitance	V_{DS}=25V	-	30.7	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	5.1	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
I_S	Continuous Source Current (Body Diode)	V_D=V_G=0V , V_S=1.2V	-	-	160	mA
V_{SD}	Forward On Voltage[3]	I_S=160mA, V_{GS}=0V	-	-	1.2	V

Notes:

1.Pulse width limited by safe operating area.

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

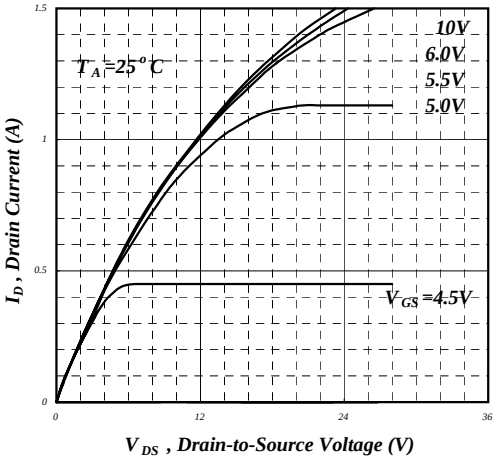


Fig 1. Typical Output Characteristics

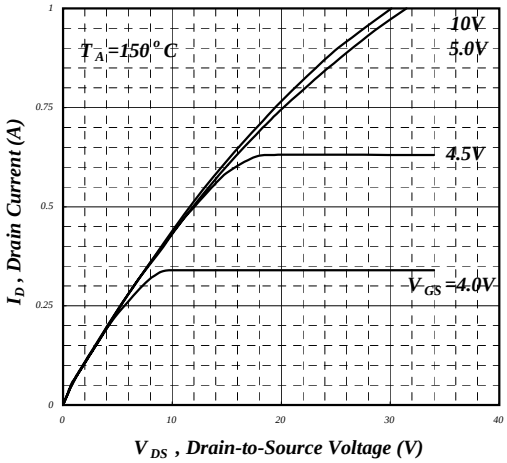


Fig 2. Typical Output Characteristics

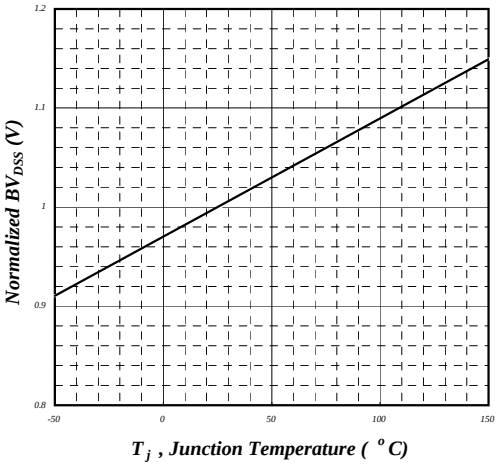


Fig 3. Normalized BV_{DSS} v.s. Junction Temperature

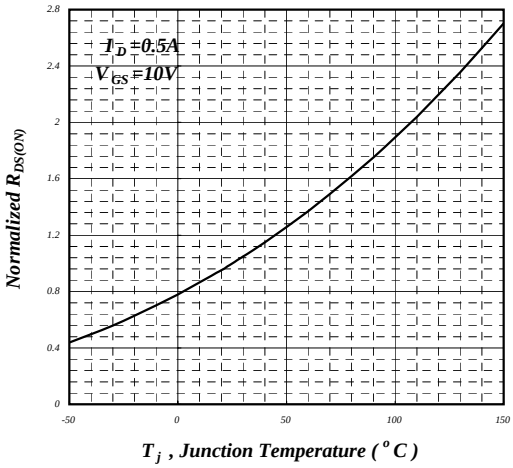


Fig 4. Normalized On-Resistance v.s. Junction Temperature

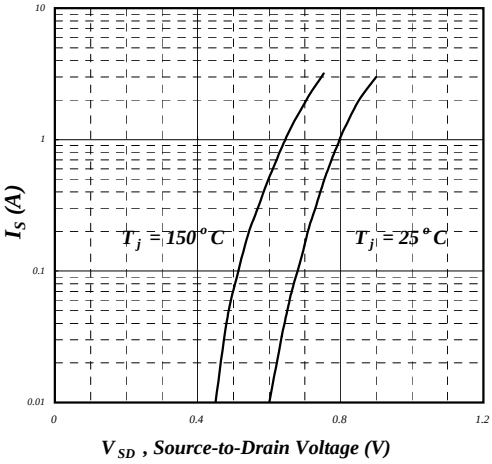


Fig 5. Forward Characteristic of Reverse Diode

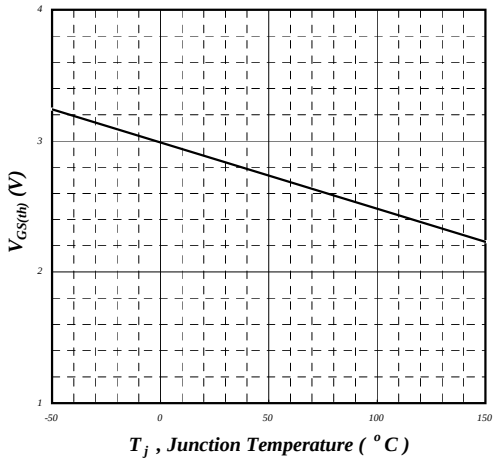


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

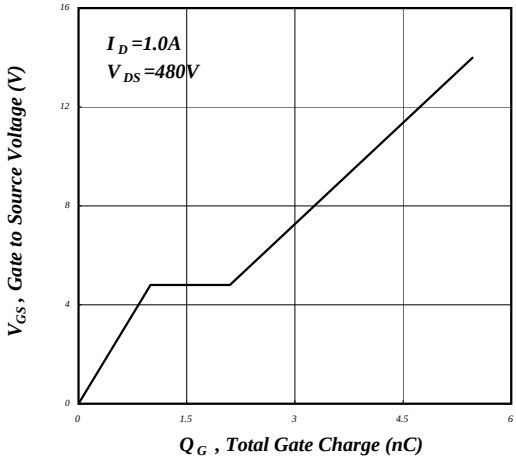


Fig 7. Gate Charge Characteristics

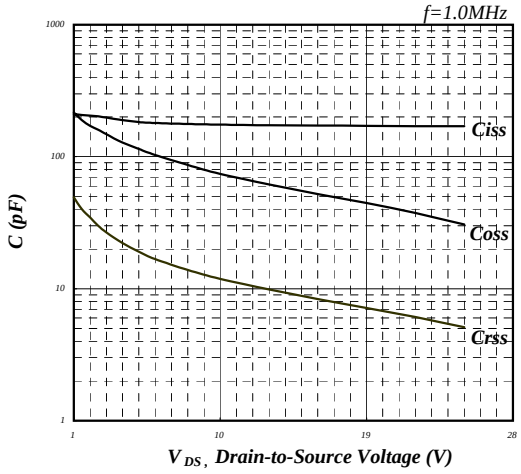


Fig 8. Typical Capacitance Characteristics

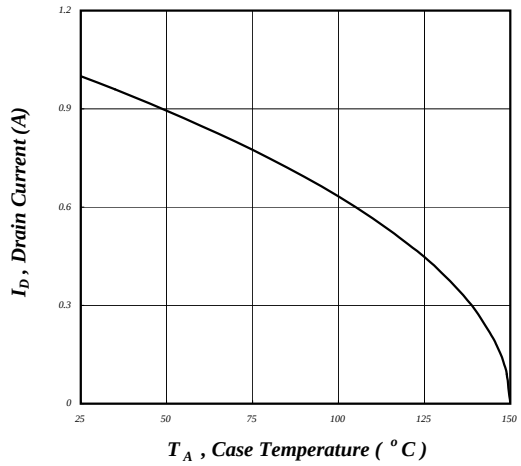


Fig 9. Maximum Drain Current v.s. Case Temperature

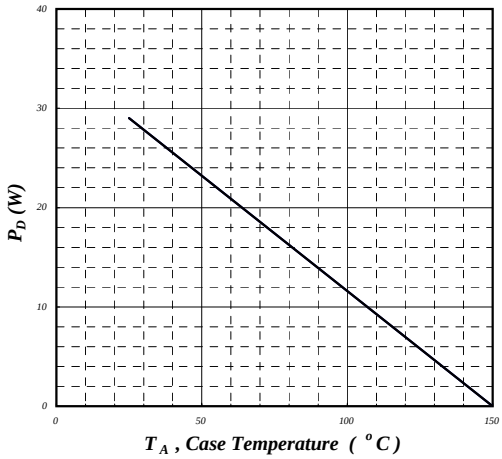


Fig 10. Typical Power Dissipation

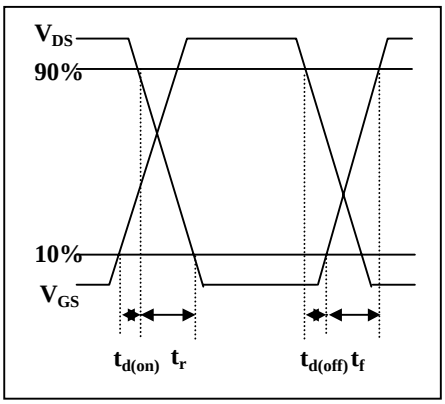


Fig 11. Switching Time Waveform

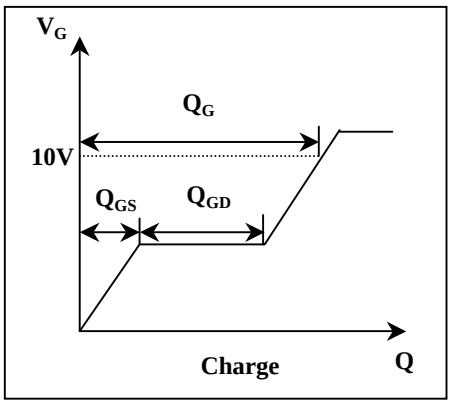


Fig 12. Gate Charge Waveform