Advanced Power Electronics Corp.

N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

▼ **Fast Switching Characteristic**

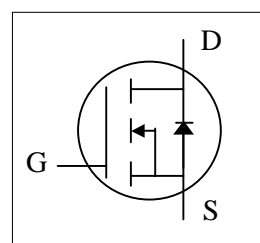▼ **Lower Gate Charge**

▼ **Small Footprint & Low Profile Package**

SOT-26

BV_{DSS}	30V
$R_{DS(ON)}$	45mΩ
I_D	5.5A

Description

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

The S0T-26 package is universally used for all commercial-industrial applications.

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[3], V_{GS} @ 4.5V	5.5	A
I_D@T_A=70℃	Continuous Drain Current[3], V_{GS} @ 4.5V	4.4	A
I_{DM}	Pulsed Drain Current[1]	20	A
P_D@T_A=25℃	Total Power Dissipation	2	W
	Linear Derating Factor	0.016	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[3]	Max.	62.5	℃/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
ΔBV$_{DSS}$/ΔT$_j$	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$_D$=4.8A	-	-	45	mΩ
		V$_{GS}$=4.5V, I$_D$=2.4A	-	-	65	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$_D$=4.8A	-	7	-	S
I$_{DSS}$	Drain-Source Leakage Current (T$_j$=25°C)	V$_{DS}$=30V, V$_{GS}$=0V	-	-	1	uA
	Drain-Source Leakage Current (T$_j$=70°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$_D$=4.8A	-	6	10	nC
Q$_{gs}$	Gate-Source Charge	V$_{DS}$=24V	-	2	-	nC
Q$_{gd}$	Gate-Drain ("Miller") Charge	V$_{GS}$=4.5V	-	3	-	nC
t$_{d(on)}$	Turn-on Delay Time[2]	V$_{DS}$=15V	-	6	-	ns
t$_r$	Rise Time	I$_D$=1A	-	8	-	ns
t$_{d(off)}$	Turn-off Delay Time	R$_G$=3.3Ω,V$_{GS}$=10V	-	15	-	ns
t$_f$	Fall Time	R$_D$=15Ω	-	4	-	ns
C$_{iss}$	Input Capacitance	V$_{GS}$=0V	-	440	705	pF
C$_{oss}$	Output Capacitance	V$_{DS}$=25V	-	105	-	pF
C$_{rss}$	Reverse Transfer Capacitance	f=1.0MHz	-	35	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V$_{SD}$	Forward On Voltage[2]	I$_S$=4.8A, V$_{GS}$=0V	-	-	1.2	V
t$_{rr}$	Reverse Recovery Time[2]	I$_S$=4.8A, V$_{GS}$=0V,	-	15	-	ns
Q$_{rr}$	Reverse Recovery Charge	dI/dt=100A/µs	-	7	-	nC

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse width $\leq$300us , duty cycle $\leq$2%.

3.Surface mounted on 1 in^2 copper pad of FR4 board ; 156℃/W when mounted on min. copper pad.
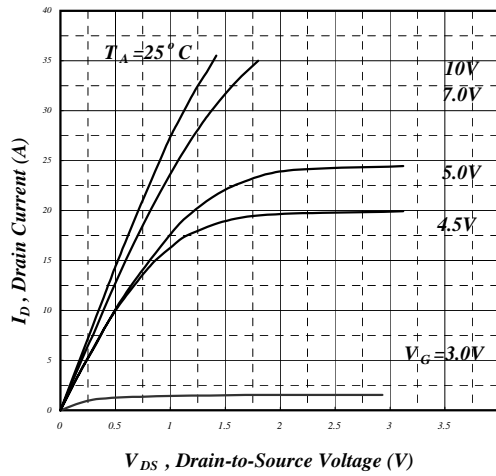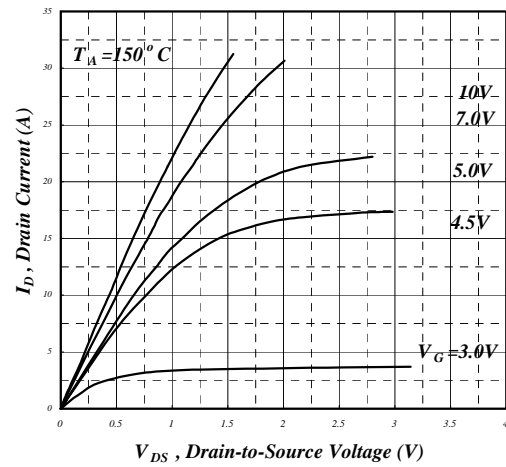
Fig 1. Typical Output Characteristics
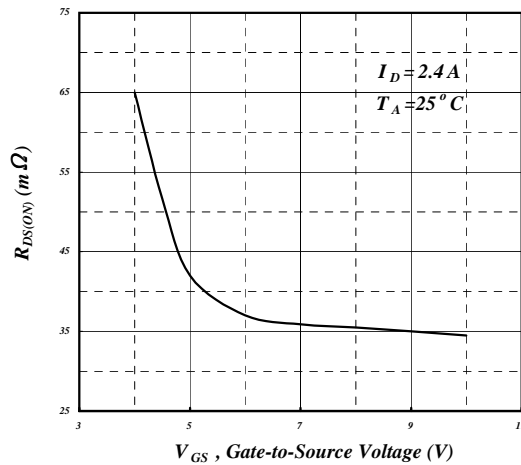
Fig 2. Typical Output Characteristics
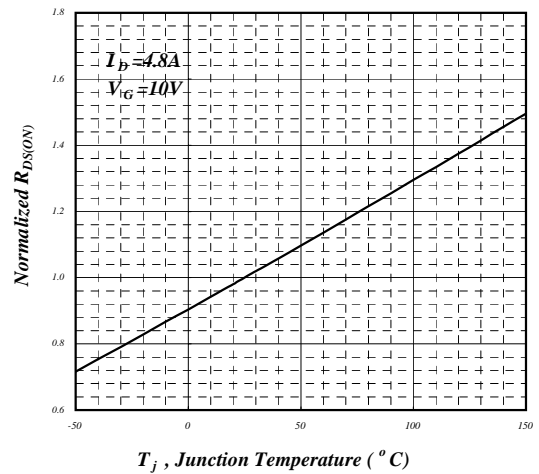
Fig 3. On-Resistance v.s. Gate Voltage

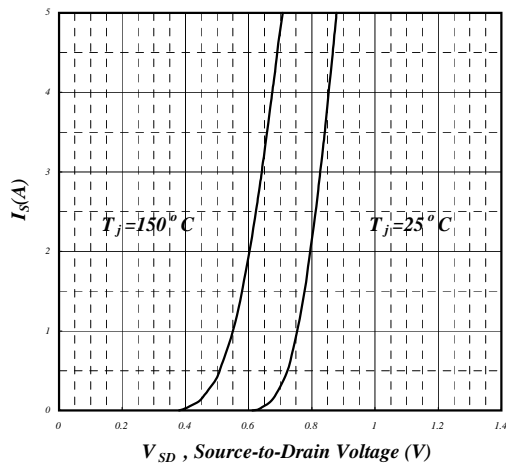**Fig 4. Normalized On-Resistance
v.s. Junction Temperature**

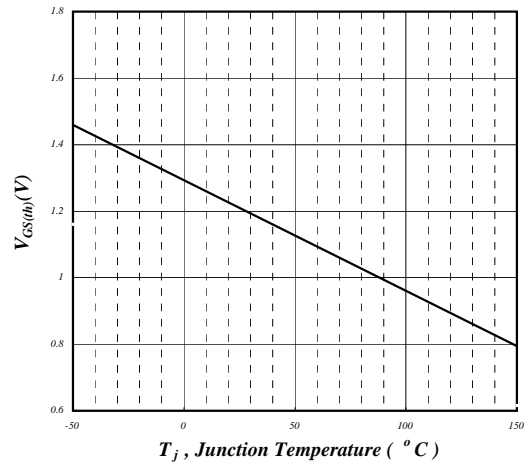**Fig 5. Forward Characteristic of
Reverse Diode**

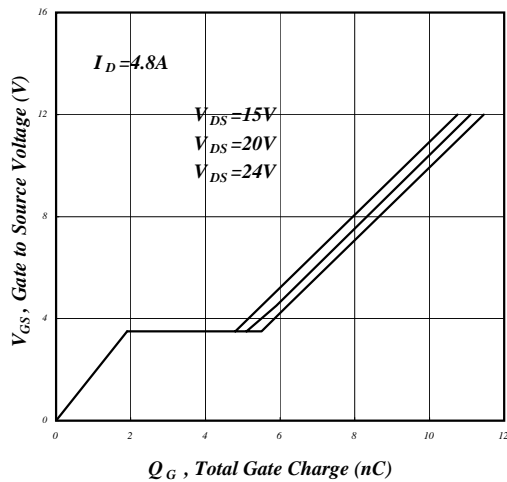**Fig 6. Gate Threshold Voltage v.s.
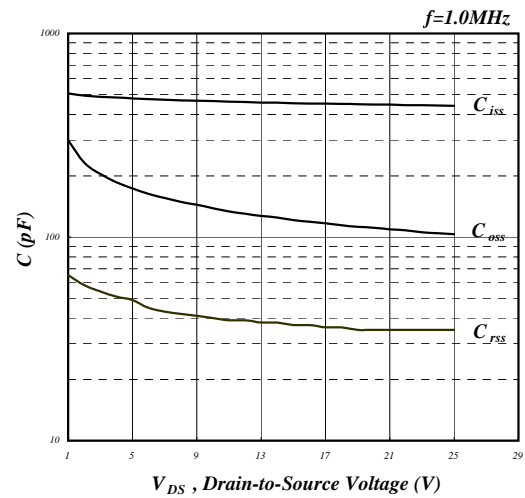Junction Temperature**

Fig 7. Gate Charge Characteristics
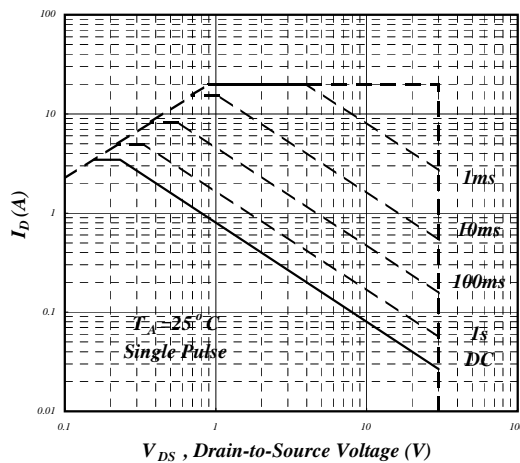
Fig 8. Typical Capacitance Characteristics
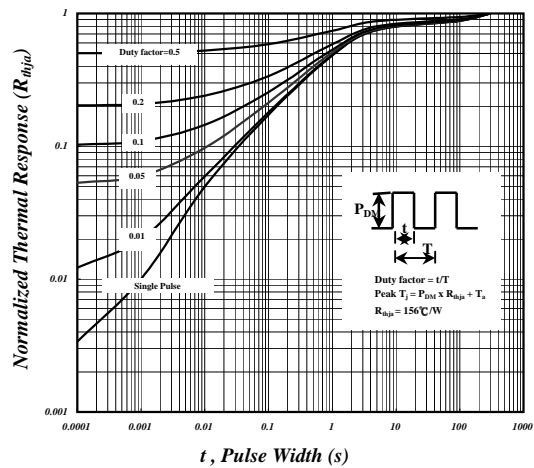
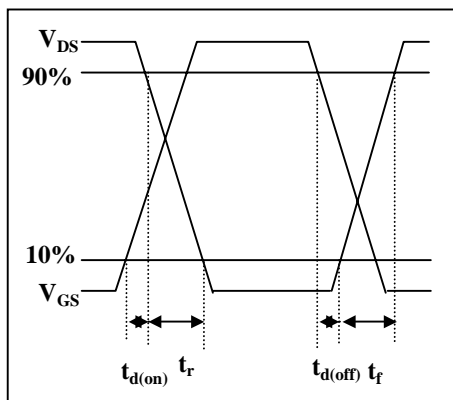**Fig 9. Maximum Safe Operating Area**
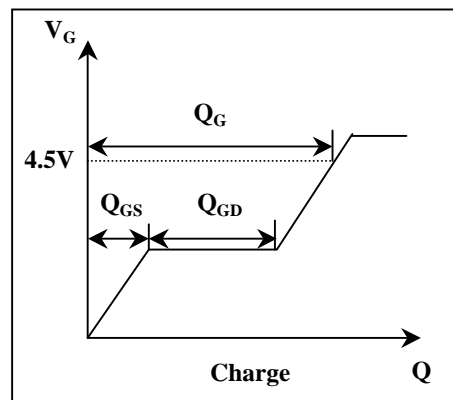
Fig 10. Effective Transient Thermal Impedance

Fig 11. Switching Time Waveform

Fig 12. Gate Charge Waveform