Advanced Power Electronics Corp.

DUAL N-CHANNEL ENHANCEMENT MODE POWER MOSFET

|	
BV_{DSS}	30V
$R_{DS(ON)}$	18mΩ
I_D	22A

▼ **Simple Drive Requirement**

▼ **Fast Switching Performance**

▼ **Two Independent Device**

▼ **Halogen Free & RoHS Compliant Product**

Description

Advanced Power MOSFETs from APEC provide the designer with the best combination of fast switching, ruggedized device design, ultra low on-resistance and cost-effectiveness.

SDPAK^{TM} used APEC innovated package and provides two independent device that is suitable and optimum for DC/DC power application.

D1 (TAB1)
D2 (TAB2)
S1 G1 S2 G2

SDPAK^{TM}
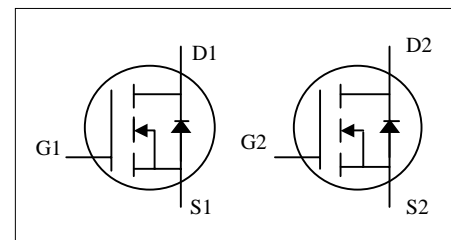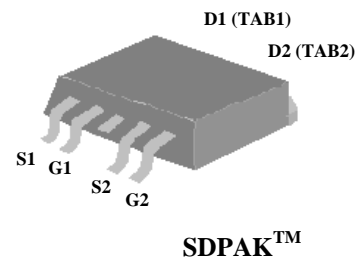
Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	$\pm$20	V
I_D@T_C=25℃	Continuous Drain Current	22	A
I_D@T_A=25℃	Continuous Drain Current[3]	10.6	A
I_D@T_A=70℃	Continuous Drain Current[3]	8.5	A
I_{DM}	Pulsed Drain Current[1]	50	A
P_D@T_A=25℃	Total Power Dissipation	3	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-c	Maximum Thermal Resistance, Junction-case	10.0	℃/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient[3]	42	℃/W

Data and specifications subject to change without notice

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
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=9A	-	-	18	mΩ
		V_{GS}=4.5V, I_D=6A	-	-	38	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=9A	-	12	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=30V, V_{GS}=0V	-	-	10	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=$\pm$20V, V_{DS}=0V	-	-	$\pm$100	nA
Q_g	Total Gate Charge[2]	I_D=9A	-	8.7	14	nC
Q_{gs}	Gate-Source Charge	V_{DS}=24V	-	2	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=4.5V	-	6	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=15V	-	6	-	ns
t_r	Rise Time	I_D=9A	-	24	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω,V_{GS}=10V	-	15	-	ns
t_f	Fall Time	R_D=1.67Ω	-	6	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	445	710	pF
C_{oss}	Output Capacitance	V_{DS}=25V	-	110	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	95	-	pF
R_g	Gate Resistance	f=1.0MHz	-	1.5	2.4	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=2.5A, V_{GS}=0V	-	-	1.2	V
t_{rr}	Reverse Recovery Time[2]	Is=9A, V_{GS}=0V,	-	20	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/µs	-	8	-	nC

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse test

3.Rthja is determined with the device, mounted on 2oz FR4 board t $\leq$ 10s.
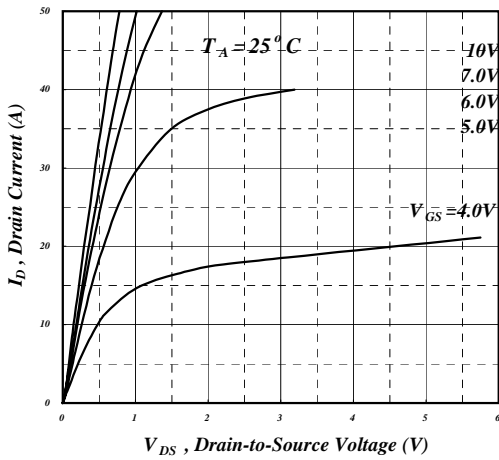
Fig 1. Typical Output Characteristics
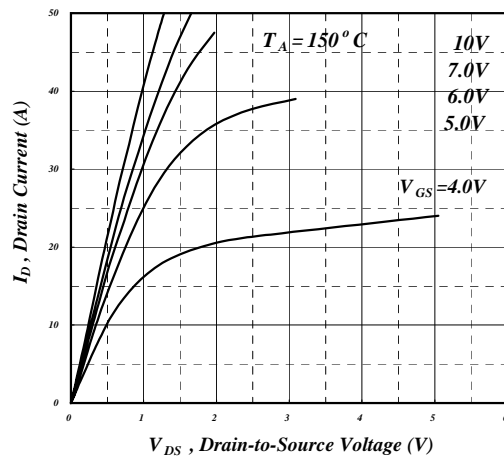

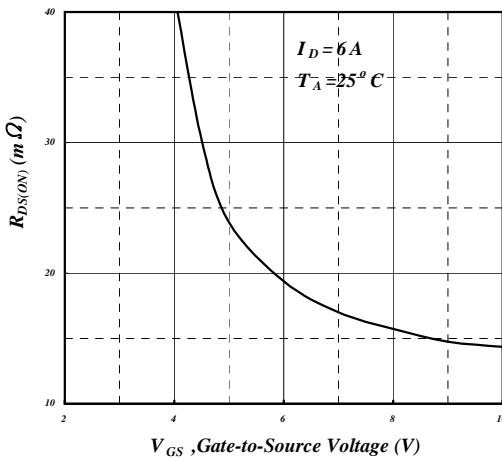**Fig 2. Typical Output Characteristics**

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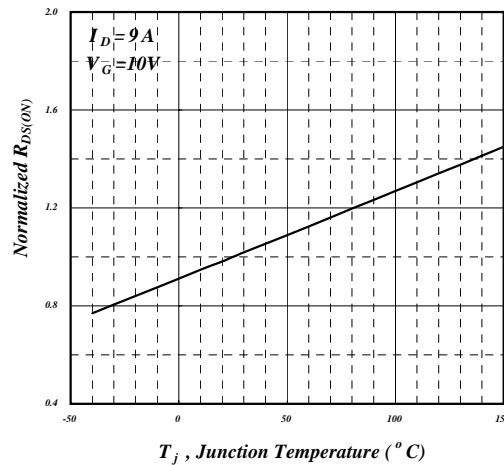

**Fig 4. Normalized On-Resistance
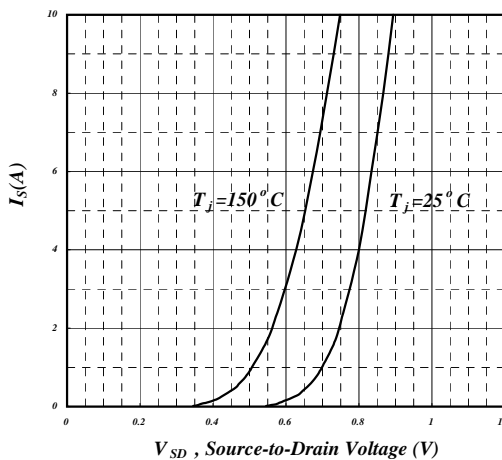v.s. Junction Temperature**

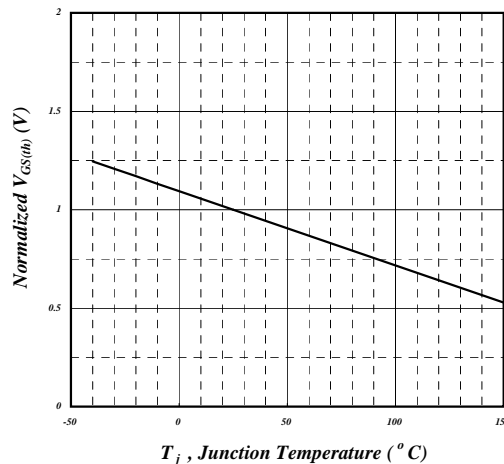**Fig 5. Forward Characteristic of
Reverse Diode**

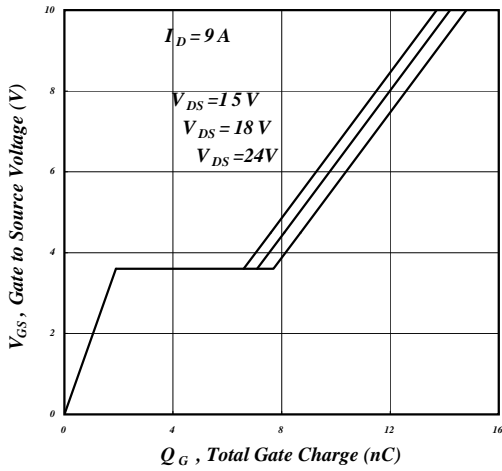**Fig 6. Gate Threshold Voltage v.s.
Junction Temperature**

Fig 7. Gate Charge Characteristics
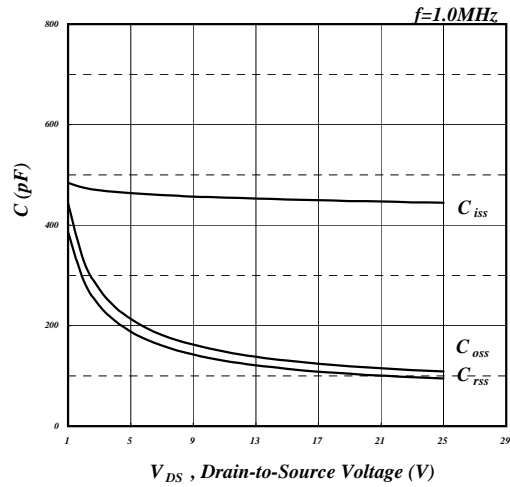

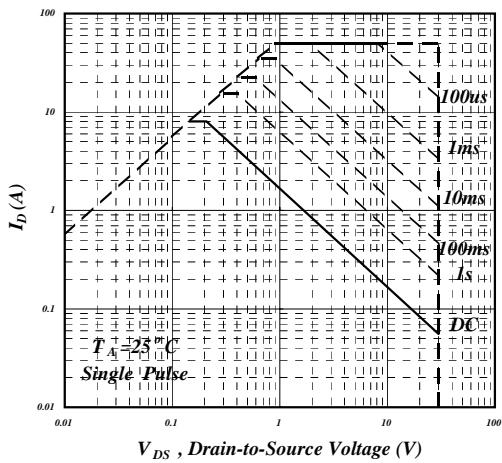**Fig 8. Typical Capacitance Characteristics**

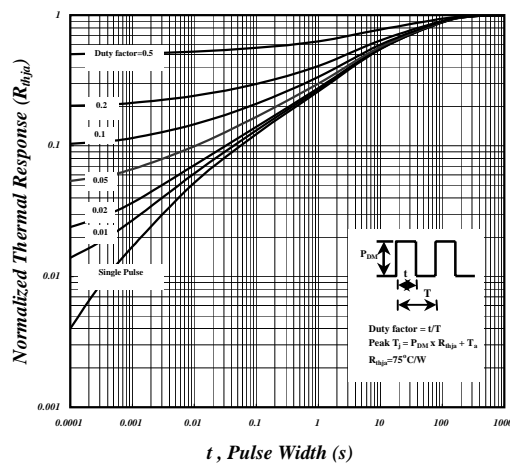**Fig 9. Maximum Safe Operating Area**
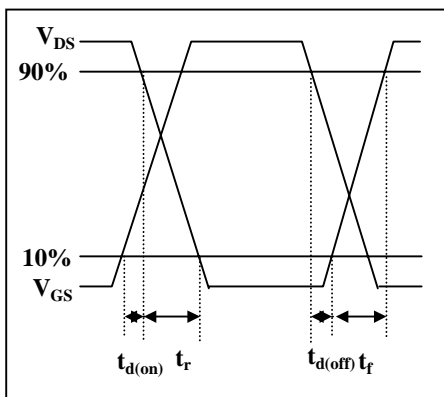

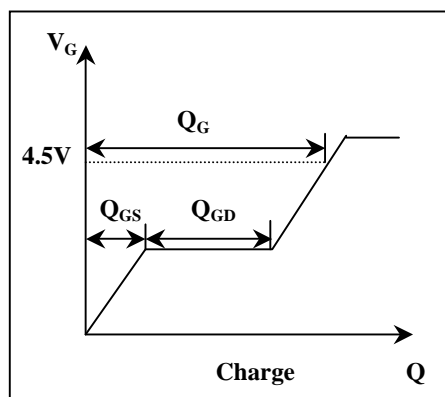**Fig 10. Effective Transient Thermal Impedance**

Fig 11. Switching Time Waveform

Fig 12. Gate Charge Waveform