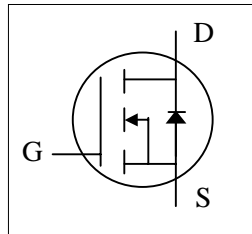
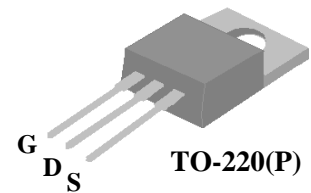




- ▼ Ease of Paralleling
- ▼ Fast Switching Characteristic
- ▼ Simple Drive Requirement



BV_{DSS}	500V
$R_{DS(ON)}$	1.5 Ω
I_D	4.5A



Description

APEC MOSFET provide the power designer with the best combination of fast switching , lower on-resistance and reasonable cost.

The TO-220 and package is universally preferred for all commercial-industrial applications. The device is suited for switch mode power supplies ,DC-AC converters and high current high speed switching circuits.

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	500	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current, V_{GS} @ 10V	4.5	A
$I_D@T_C=100^\circ C$	Continuous Drain Current, V_{GS} @ 10V	2.8	A
I_{DM}	Pulsed Drain Current ¹	18	A
$P_D@T_C=25^\circ C$	Total Power Dissipation	74	W
	Linear Derating Factor	0.59	W/ $^\circ C$
E_{AS}	Single Pulse Avalanche Energy ²	101	mJ
I_{AR}	Avalanche Current	4.5	A
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$

Thermal Data

Symbol	Parameter	Value	Unit
Rthj-c	Thermal Resistance Junction-case	Max. 1.7	$^\circ C/W$
Rthj-a	Thermal Resistance Junction-ambient	Max. 62	$^\circ C/W$



Electrical Characteristics @ $T_j=25^{\circ}\text{C}$ (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=1mA$	500	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=2.7A$	-	-	1.5	Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2	-	4	V
g_{fs}	Forward Transconductance	$V_{DS}=10V, I_D=2.7A$	-	2.4	-	S
I_{DSS}	Drain-Source Leakage Current ($T_j=25^{\circ}\text{C}$)	$V_{DS}=500V, V_{GS}=0V$	-	-	25	μA
	Drain-Source Leakage Current ($T_j=125^{\circ}\text{C}$)	$V_{DS}=400V, V_{GS}=0V$	-	-	250	μA
I_{GSS}	Gate-Source Leakage	$V_{GS}=\pm 20V$	-	-	± 100	nA
Q_g	Total Gate Charge ³	$I_D=3.1A$	-	28	45	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=400V$	-	4	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	$V_{GS}=10V$	-	16	-	nC
$t_{d(on)}$	Turn-on Delay Time ³	$V_{DD}=250V$	-	10	-	ns
t_r	Rise Time	$I_D=3.1A$	-	15	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=12\Omega, V_{GS}=10V$	-	41	-	ns
t_f	Fall Time	$R_D=80.6\Omega$	-	20	-	ns
C_{iss}	Input Capacitance	$V_{GS}=0V$	-	710	1140	pF
C_{oss}	Output Capacitance	$V_{DS}=25V$	-	170	-	pF
C_{rss}	Reverse Transfer Capacitance	$f=1.0MHz$	-	60	-	pF
R_g	Gate Resistance	$f=1.0MHz$	-	2	3.0	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage ³	$T_j=25^{\circ}\text{C}, I_S=4.5A, V_{GS}=0V$	-	-	1.5	V
t_{rr}	Reverse Recovery Time ³	$I_S=3.1A, V_{GS}=0V,$	-	370	-	ns
Q_{rr}	Reverse Recovery Charge	$di/dt=100A/\mu s$	-	3.9	-	μC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Starting $T_j=25^{\circ}\text{C}$, $V_{DD}=50V$, $L=10mH$, $R_G=25\Omega$
- 3.Pulse test

THIS PRODUCT IS ELECTROSTATIC SENSITIVE, PLEASE HANDLE WITH CAUTION.

THIS PRODUCT HAS BEEN QUALIFIED FOR USE IN CONSUMER APPLICATIONS. APPLICATIONS OR USE IN LIFE SUPPORT OR OTHER SIMILAR MISSION-CRITICAL DEVICES OR SYSTEMS ARE NOT AUTHORIZED.

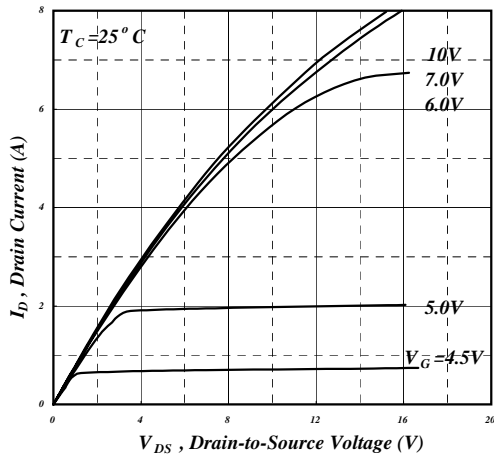


Fig 1. Typical Output Characteristics

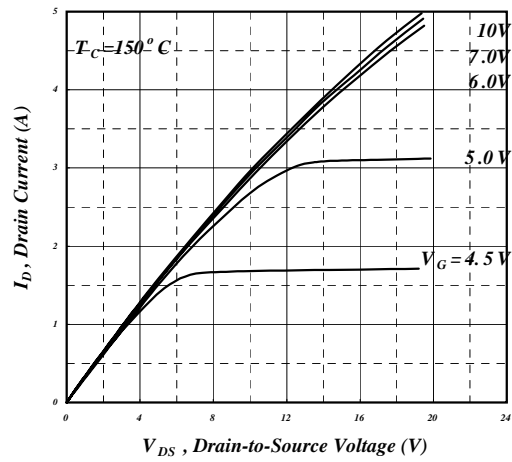


Fig 2. Typical Output Characteristics

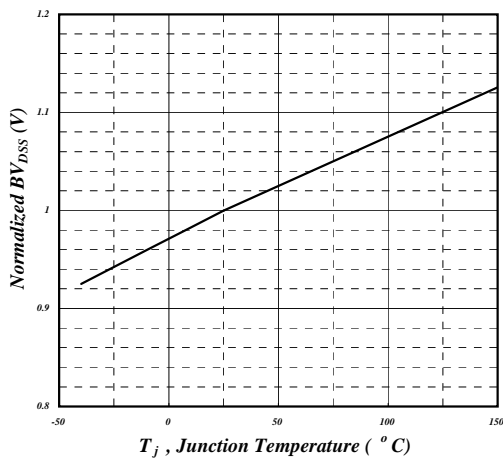


Fig 3. Normalized BV_{DSS} v.s. Junction Temperature

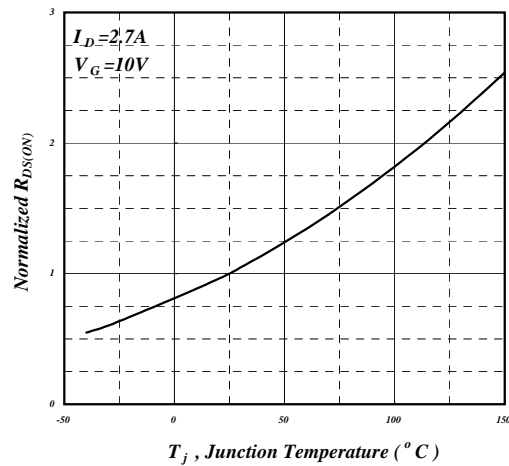


Fig 4. Normalized On-Resistance v.s. Junction Temperature

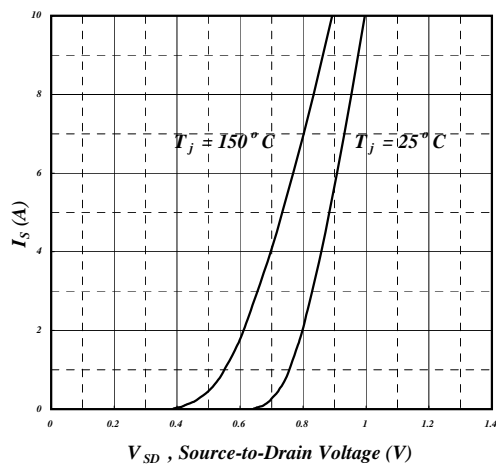


Fig 5. Forward Characteristic of Reverse Diode

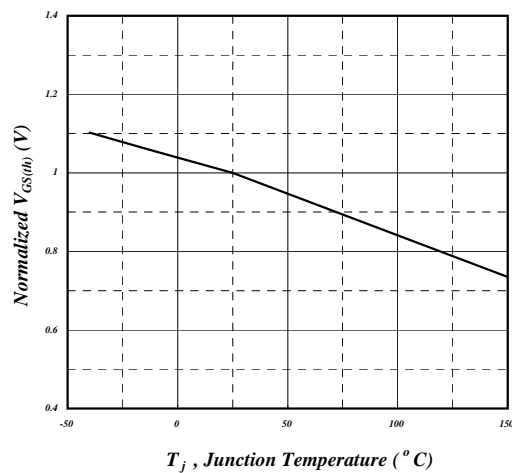


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

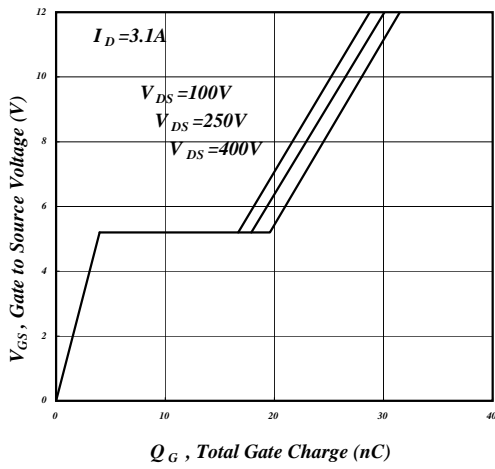


Fig 7. Gate Charge Characteristics

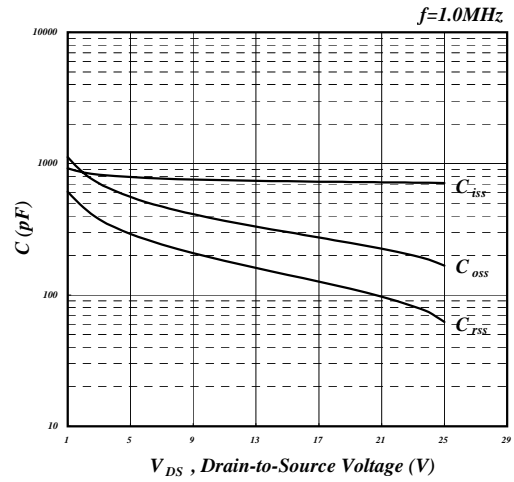


Fig 8. Typical Capacitance Characteristics

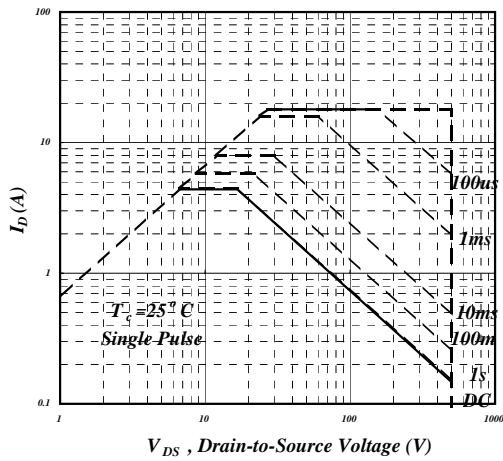


Fig 9. Maximum Safe Operating Area

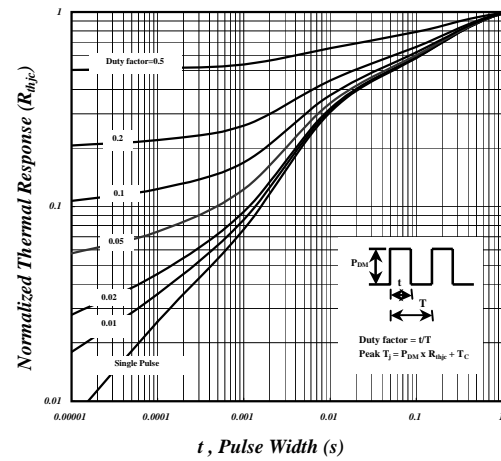


Fig 10. Effective Transient Thermal Impedance



Fig 11. Switching Time Waveform

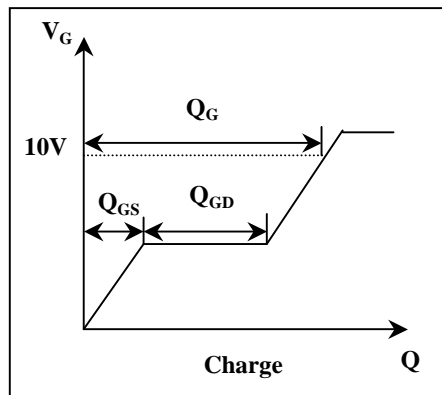


Fig 12. Gate Charge Waveform