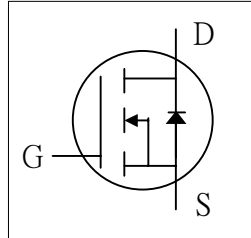
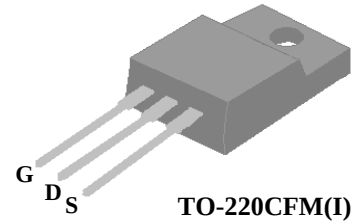




- ▼ 100% Avalanche Test
- ▼ Fast Switching Characteristic
- ▼ Simple Drive Requirement
- ▼ RoHS Compliant & Halogen-Free



BV_{DSS}	700V
$R_{DS(ON)}$	2.4 Ω
I_D	4A



Description

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

The TO-220CFM package is widely preferred for 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	700	V
V_{GS}	Gate-Source Voltage	± 30	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10V	4	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10V	2.5	A
I_{DM}	Pulsed Drain Current ¹	15	A
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	33	W
	Linear Derating Factor	0.26	W/ $^\circ\text{C}$
E_{AS}	Single Pulse Avalanche Energy ²	8	mJ
I_{AR}	Avalanche Current	4	A
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Value	Units
R_{thj-c}	Maximum Thermal Resistance, Junction-case	3.8	$^\circ\text{C}/\text{W}$
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient	65	$^\circ\text{C}/\text{W}$

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	700	-	-	V
ΔBV _{DSS} /ΔT _j	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I _D =1mA	-	0.6	-	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ³	V _{GS} =10V, I _D =2A	-	-	2.4	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 =2A	-	2.5	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =600V, V _{GS} =0V	-	-	10	uA
	Drain-Source Leakage Current (T _j =125°C)	V _{DS} =480V, V _{GS} =0V	-	-	500	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±30V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge ³	I _D =4A	-	16.7	-	nC
Q _{gs}	Gate-Source Charge	V _{DS} =480V	-	4.1	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =10V	-	4.9	-	nC
t _{d(on)}	Turn-on Delay Time ³	V _{DD} =300V	-	11	-	ns
t _r	Rise Time	I _D =4A	-	8.3	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =10Ω, V _{GS} =10V	-	23.8	-	ns
t _f	Fall Time	R _D =75Ω	-	8.2	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	950	-	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	65	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	6	-	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 =1.5V	-	-	4	A
I _{SM}	Pulsed Source Current (Body Diode) ¹		-	-	15	A
V _{SD}	Forward On Voltage ³	T _j =25°C, I _S =4A, V _{GS} =0V	-	-	1.5	V

Notes:

- 1.Pulse width limited by max. junction temperature
- 2.Starting T_j=25°C, V_{DD}=50V, L=1mH, R_G=25Ω, I_{AS}=4A.
- 3.Pulse test

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED.

APEC DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

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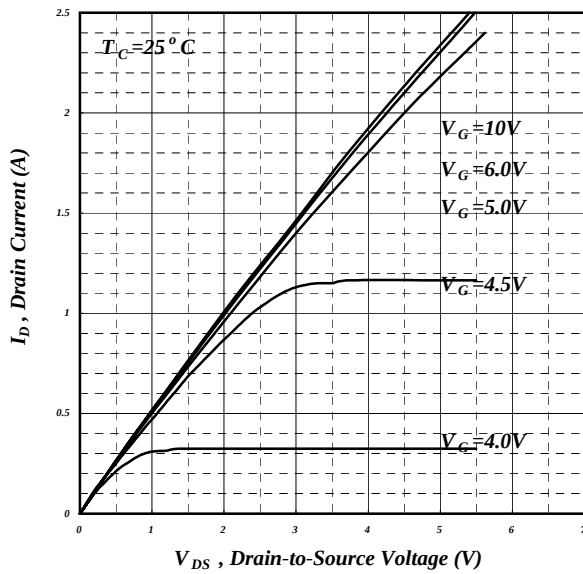


Fig 1. Typical Output Characteristics

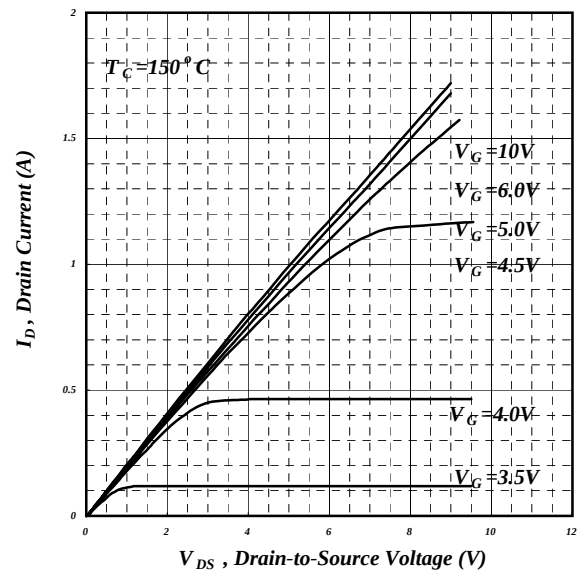


Fig 2. Typical Output Characteristics

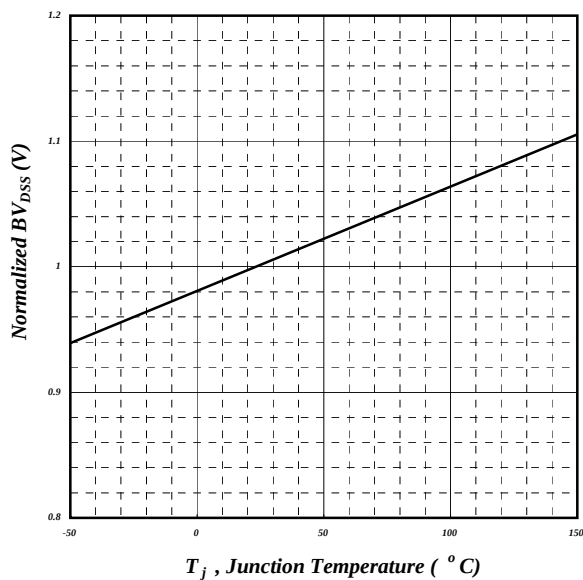


Fig 3. Normalized BV_{DSS} v.s. Junction Temperature

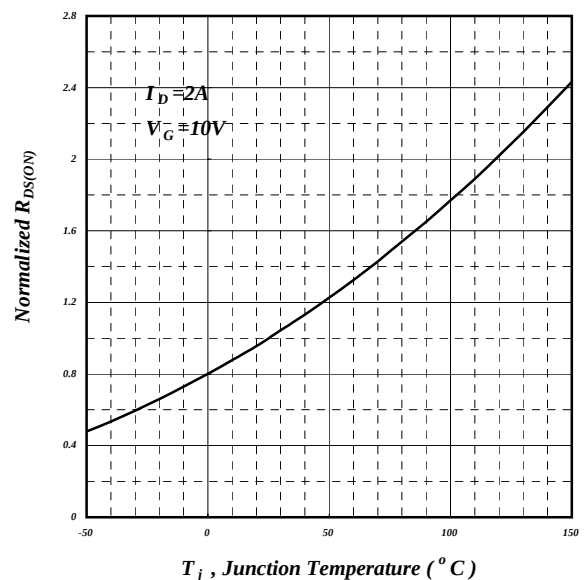


Fig 4. Normalized On-Resistance v.s. Junction Temperature



AP04N70BI-H-HF

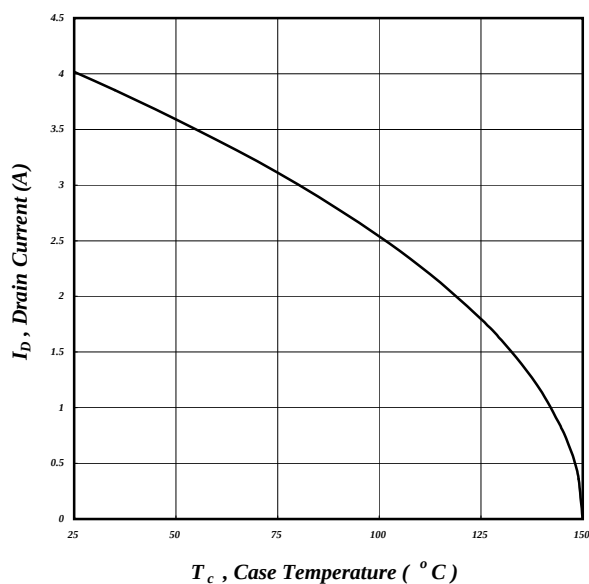


Fig 5. Maximum Drain Current v.s. Case Temperature

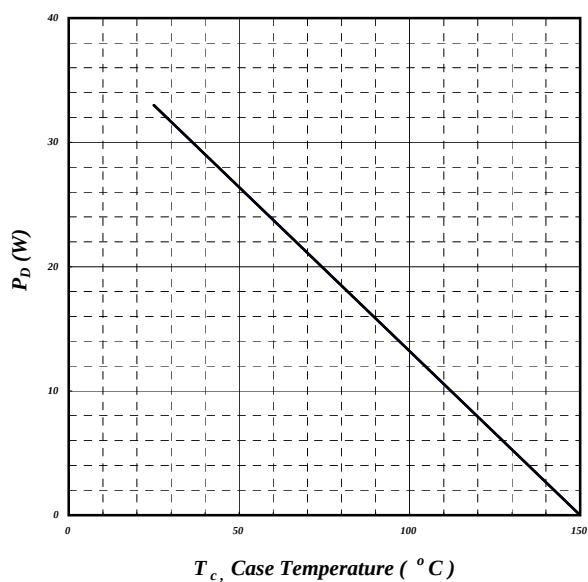


Fig 6. Typical Power Dissipation

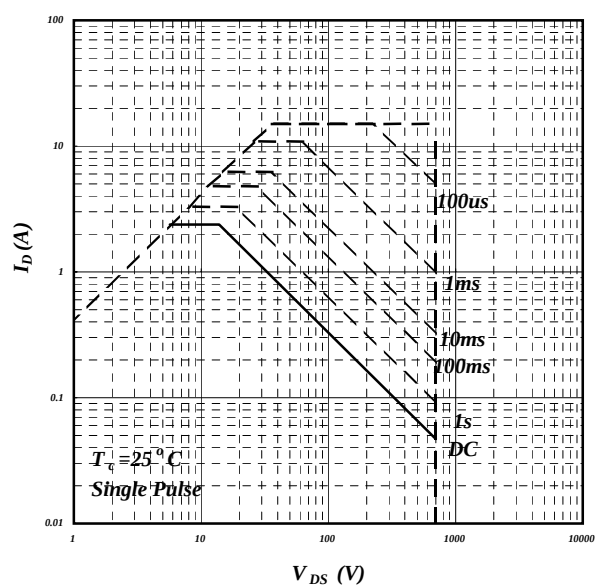


Fig 7. Maximum Safe Operating Area

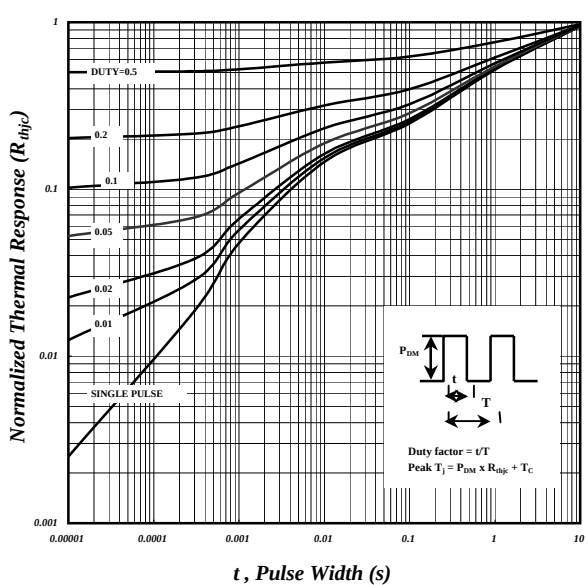
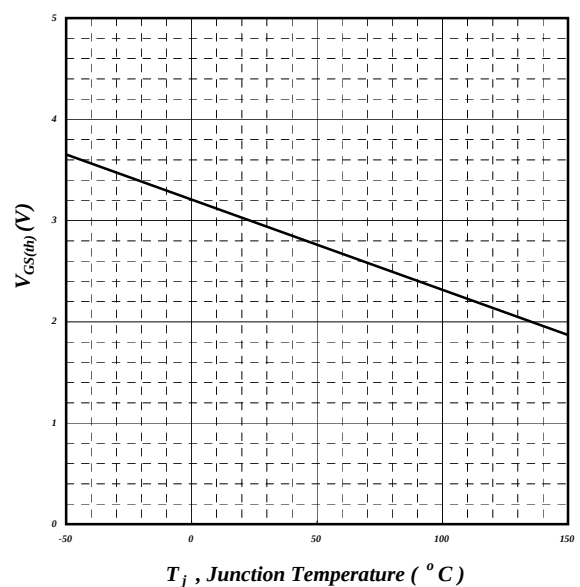
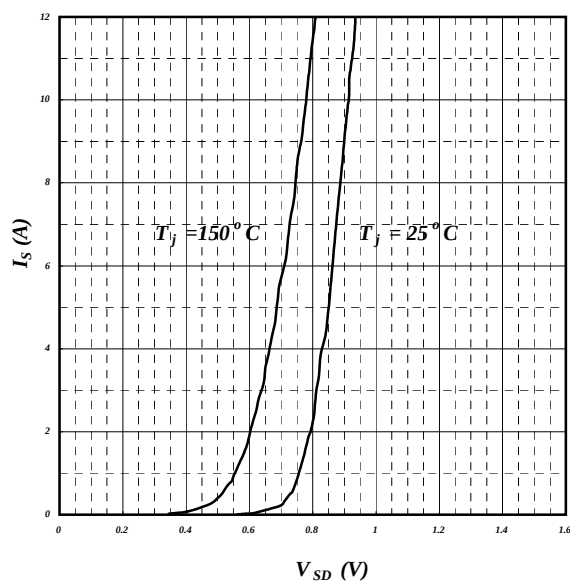
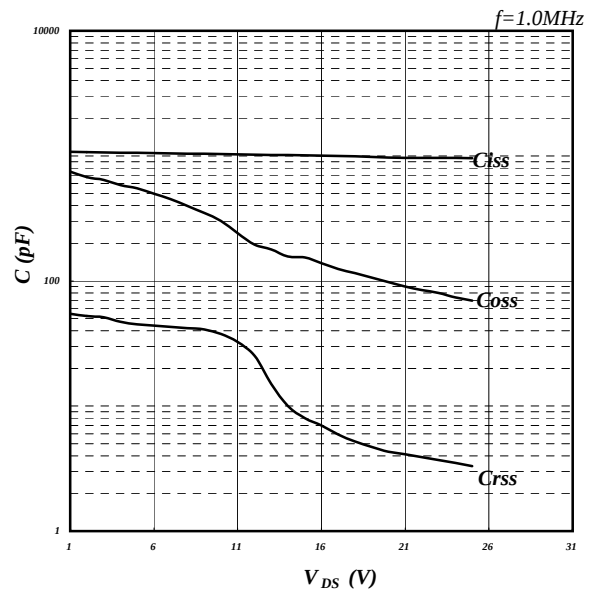
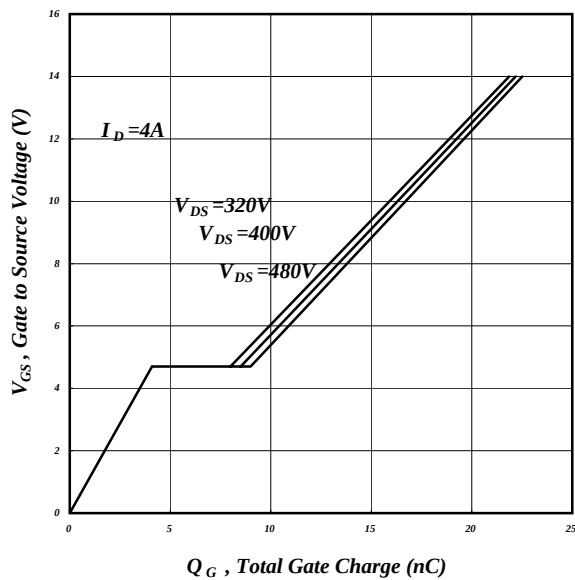


Fig 8. Effective Transient Thermal Impedance





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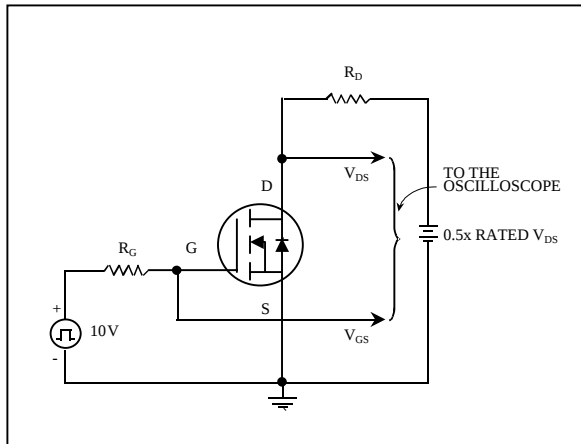


Fig 13. Switching Time Circuit

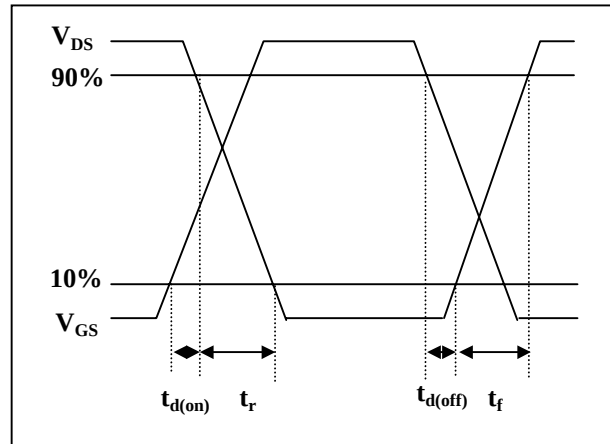


Fig 14. Switching Time Waveform

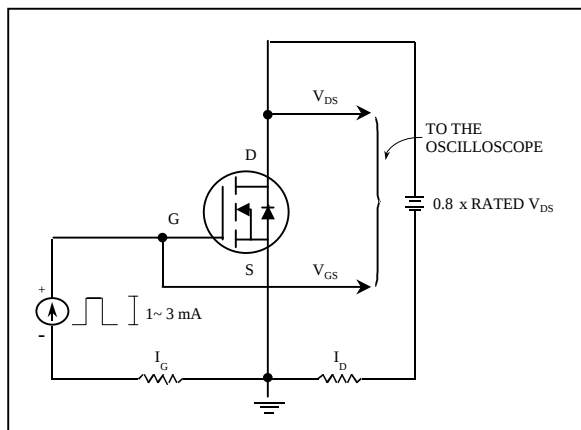


Fig 15. Gate Charge Circuit

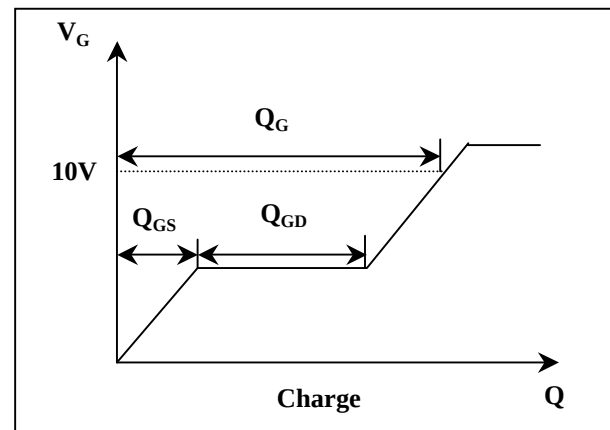


Fig 16. Gate Charge Waveform