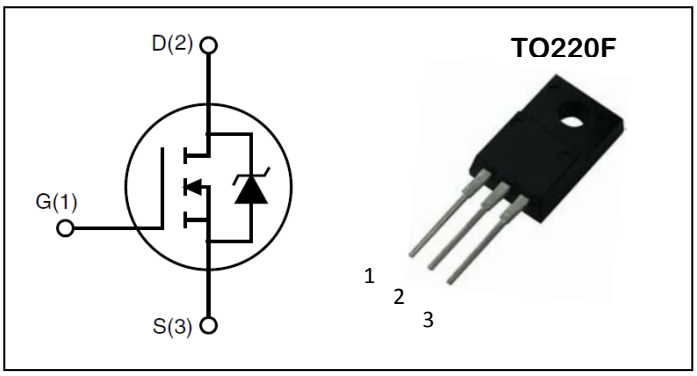
N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ)
600V	20A	135mΩ



Features:

- Low gate input resistance
- High dv/dt and avalanche capabilities
- 100% avalanche tested
- Low input capacitance and gate charge
- Lead-Free,RoHS Compliant

Description:

The ADM26N60F series MOSFETs is a new technology, which combines an innovative super junction technology and advance process. This new technology achieves low Rdson, energy saving, high reliability and uniformity, superior power density and space saving.

Absolute Maximum Ratings (T_A = 25°C unless otherwise specifed)

Symbol	Parameter		Ratings	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		600	V
V_{GSS}	Gate-Source Voltage		±30	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	TC=25°C	20	A
Mounted on Large Heat Sink				
I_{DM}	300μs Pulse Drain Current Tested(1)	T_C=25°C	80	A
I_D	Continuous Drain Current	T_C=25°C	20	A
		T_C=100°C	13	A
P_D	Power Dissipation	T_C=25°C	35	W
	Derating factor		0.28	W/°C

1. Pulse width limited by maximum junction temperature.

Thermal Characteristics

Symbol	Parameter	Ratings	Unit
R_{thJC}	Thermal resistance junction-case max	3.6	°C/W
R_{thJA}	Thermal resistance junction-ambient max	62.5	°C/W

Electrical Characteristics (TA=25°C Unless Otherwise Noted)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
On/off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=1mA	600	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= 600V, V_{GS}=0V	--	--	1	uA
		V_{DS}=600V,V_{GS}=0V T_J=125°C	--	--	50	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250uA	2	3	4	V
I_{GSS}	Gate Leakage Current	V_{GS}=±30V, V_{DS}=0V	--	--	±100	nA
$R_{DS(ON)}$	Drain-SourceOn-stateResistance(2)	V_{GS}= 10V, I_{DS}=13A	--	135	165	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}= 50V, Frequency=1MHz	--	1474	--	pF
C_{oss}	Output Capacitance		--	149	--	
C_{rss}	Reverse Transfer Capacitance		--	4	--	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time(1)	V_{DS}=300V, I_D= 10A, V_{GS}= 10V, R_{GEN}=4.7Ω R_L=30Ω	--	15.2	--	ns
t_r	Turn-on Rise Time(1)		--	18.2	--	
$t_{d(OFF)}$	Turn-off Delay Time(1)		--	46.0	--	
t_f	Turn-off Fall Time(1)		--	15.7	--	
Q_g	Total Gate Charge(1)	V_{DS}=480V, V_{GS}= 10V, I_{DS}=20A	--	52.1	--	nC
Q_{gs}	Gate-Source Charge(1)		--	11.2	--	
Q_{gd}	Gate-Drain Charge(1)		--	24.9	--	
Diode Characteristics						
V_{SD}	Diode Forward Voltage(2)	I_{SD} = 20A, V_{GS} = 0	--	0.87	1.3	V
t_{rr}	Reverse Recovery Time	I_{SD}=20A, dI_{SD}/dt=100A/μs	--	370	--	ns
q_{rr}	Reverse Recovery Charge		--	5	--	uC

NOTES:

1. Independent of operating temperature.
2. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

Typical Performance Characteristics

Figure 1: Typical Output Characteristics

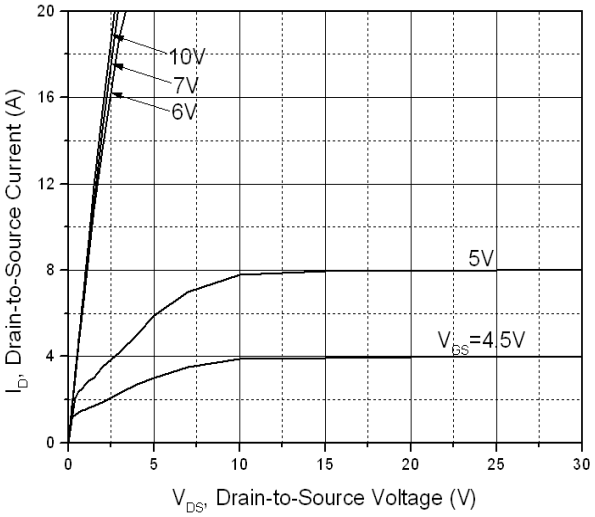


Figure 2: Typ.Gate to source cut-off voltage

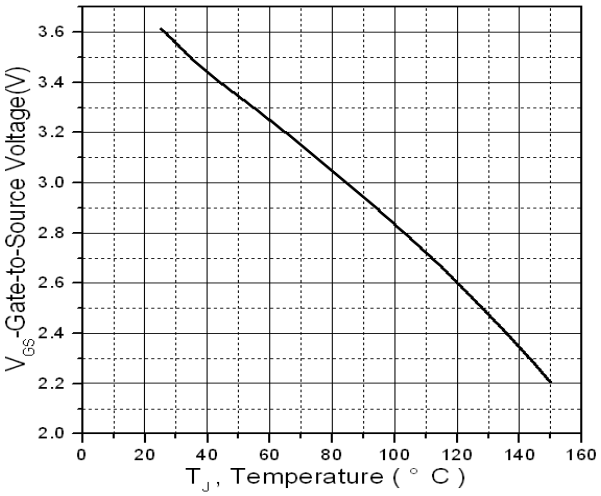


Figure 3: Drain-to-Source Breakdown Voltage vs. Temperature

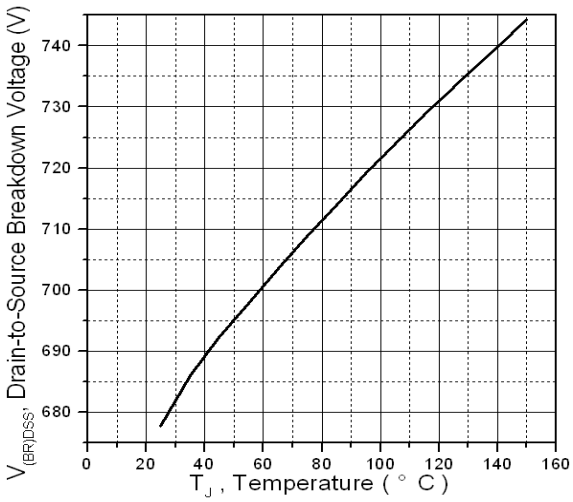


Figure 4: Normalized On-Resistance Vs. Case Temperature

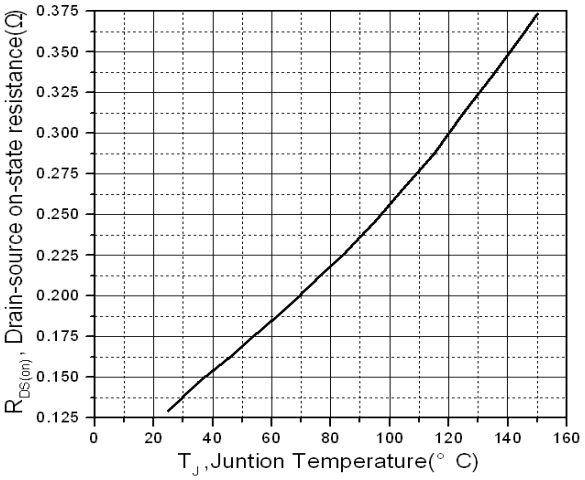


Figure 5: Maximum Drain Current Vs. Case Temperature

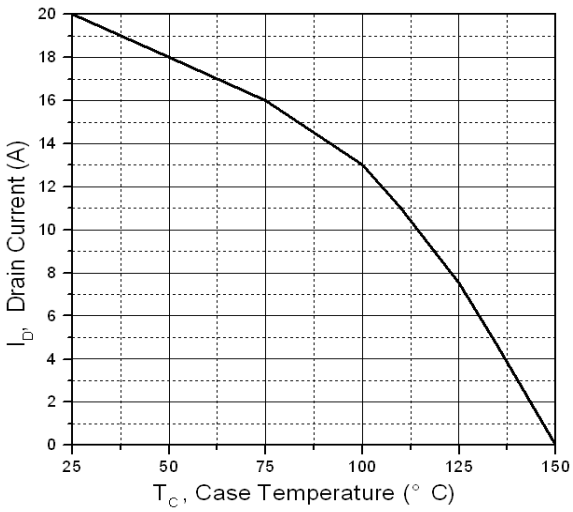
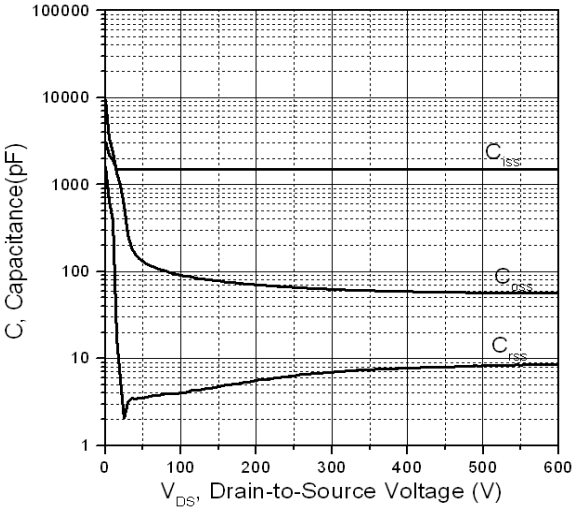
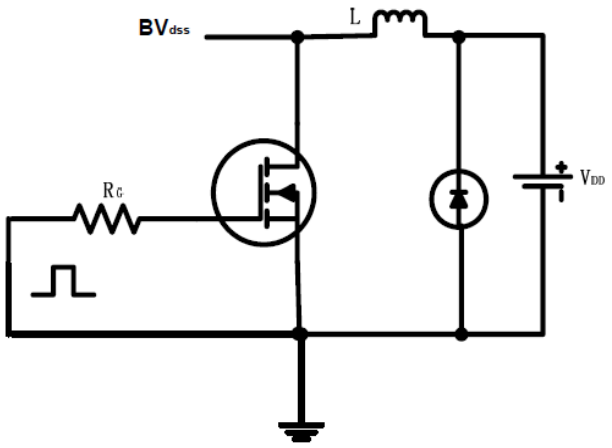


Figure 6: Typical CapacitanceVs.Drain-to-Source Voltage

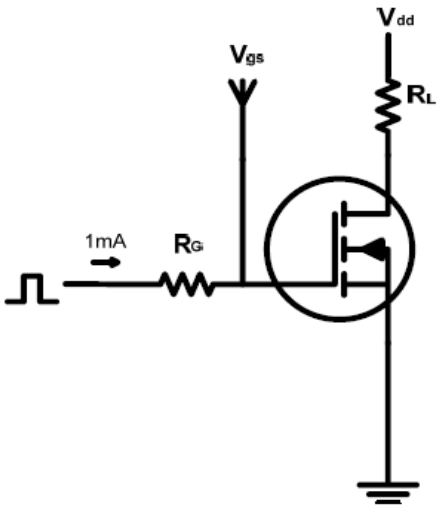


Test circuits and Waveforms

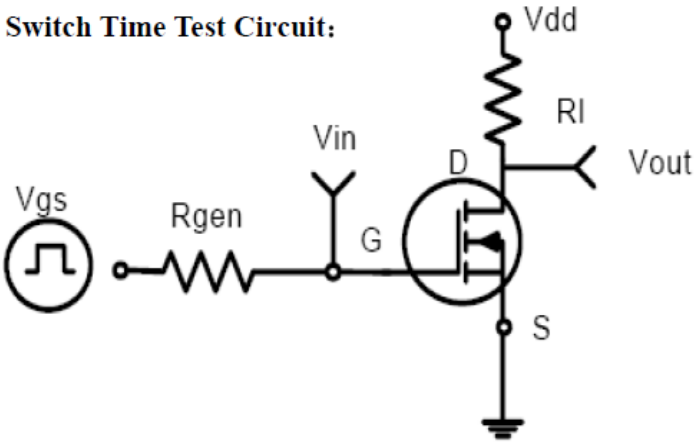
EAS test circuits:



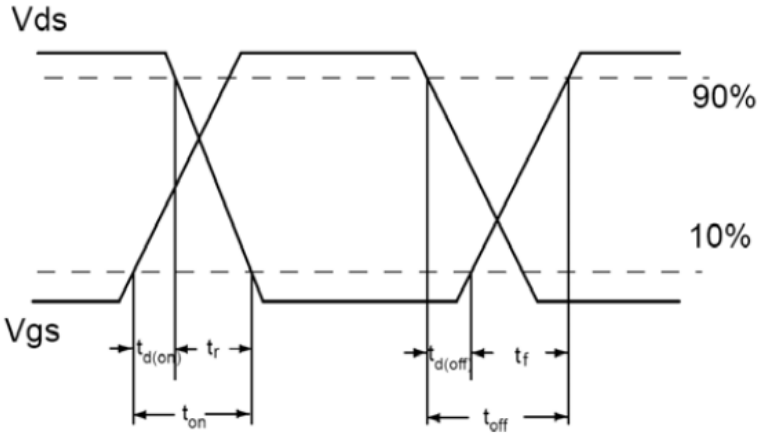
Gate charge test circuit:



Switch Time Test Circuit:

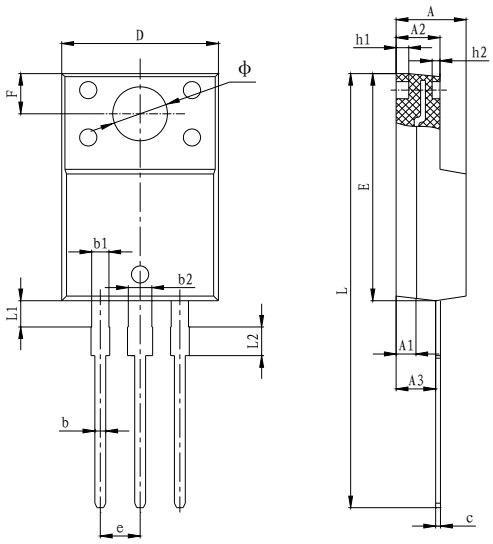


Switch Waveforms:



PACKAGE MECHANICAL DATA

TO-220F Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.300	4.700	0.169	0.185
A1	1.300 REF		0.051 REF	
A2	2.800	3.200	0.110	0.126
A3	2.500	2.900	0.098	0.114
b	0.500	0.750	0.020	0.030
b1	1.100	1.350	0.043	0.053
b2	1.500	1.750	0.059	0.069
c	0.500	0.750	0.020	0.030
D	9.960	10.360	0.392	0.408
E	14.800	15.200	0.583	0.598
e	2.540 TYP		0.100 TYP	
F	2.700 REF		0.106 REF	
Φ	3.500 REF		0.138 REF	
h	0.000	0.300	0.000	0.012
L	28.000	28.400	1.102	1.118
L1	1.700	1.900	0.067	0.075
L2	1.900	2.100	0.075	0.083