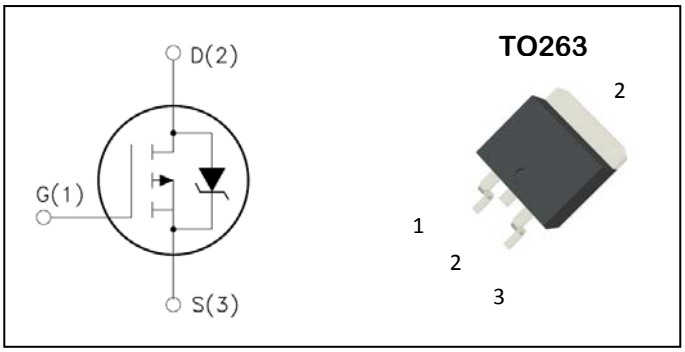
P-Channel Logic Level Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ)
-60V	-167A	4.7mΩ



Features:

- High Current Rating
- Super Low $R_{DS(ON)}$
- 100% EAS Guaranteed
- Advanced Trench technology
- Lead-Free,RoHS Compliant

Description:

The AM160P06G 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		-60	V
V_{GSS}	Gate-Source Voltage		±20	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current (1,6)	T_C =25°C	-167	A
Mounted on Large Heat Sink				
I_{DM}	300μs Pulse Drain Current Tested (2)	T_C=25°C	-340	A
I_D	Continuous Drain Current (1)	T_C=25°C	-167	A
		T_C=100°C	-105	A
P_D	Maximum Power Dissipation (4)	T_C=25°C	208	W
	Maximum Power Dissipation (4)	T_A=25°C	2	W

Thermal Characteristics

Symbol	Parameter	Ratings	Unit
R_{thJC}	Thermal resistance junction-case max (1)	0.6	°C/W
R_{thJA}	Thermal resistance junction-ambient max (1)	62	°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}=-250uA	-60	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-60V,V_{GS}=0V , T_J=25°C	--	--	1	uA
		V_{DS}=-60V,V_{GS}=0V , T_J=55°C	--	--	5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250A	-1.2		-2.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	--	--	±100	nA
$R_{DS(ON)}$	Drain-SourceOn-stateResistance (2)	V_{GS}= -10V, I_{DS}=30A	--	3.7	4.7	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}= -15V, Frequency=1MHz	--	24570	--	pF
C_{oss}	Output Capacitance		--	1472	--	
C_{rss}	Reverse Transfer Capacitance		--	354	--	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	V_{DS}=-30V, I_D= -30A, V_{GS}= -10V, R_{GEN}=3.3Ω	--	39.2	--	ns
t_r	Turn-on Rise Time		--	100.4	--	
$t_{d(OFF)}$	Turn-off Delay Time		--	392.4	--	
t_f	Turn-off Fall Time		--	229.6	--	
Q_g	Total Gate Charge	V_{DS}=-48V, V_{GS}= -10V, I_{DS}=-30A	--	368	--	nC
Q_{gs}	Gate-Source Charge		--	38	--	
Q_{gd}	Gate-Drain Charge		--	100	--	
EAS	Single Pulse Avalanche Energy (5)	V_{DD}=-50V , L=1mH , I_{AS}=-30A	450	--	--	mJ
Diode Characteristics						
V_{SD}	Diode Forward Voltage (2)	I_{SD} = -30A, V_{GS} = 0	--	--	-1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=-30A, dI_{SD}/dt=100A/μs	--	36.4	--	ns
q_{rr}	Reverse Recovery Charge		--	32.2	--	nC

NOTES:

1.The data tested by surface mounted on a 1 $inch^2$ FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3.The EAS data shows Max. rating . The test condition is V_{DD}=-50V,V_{GS}=-10V,L=1mH,I_{AS}=-40A

4.The power dissipation is limited by 150℃ junction temperature

5.The Min. value is 100% EAS tested guarantee.

6.The data is theoretically the same as I_D and I_{DM}, in real applications , should be limited by total power dissipation.

Typical Performance Characteristics

Figure 1: Normalized R_{DSON} v.s T_J

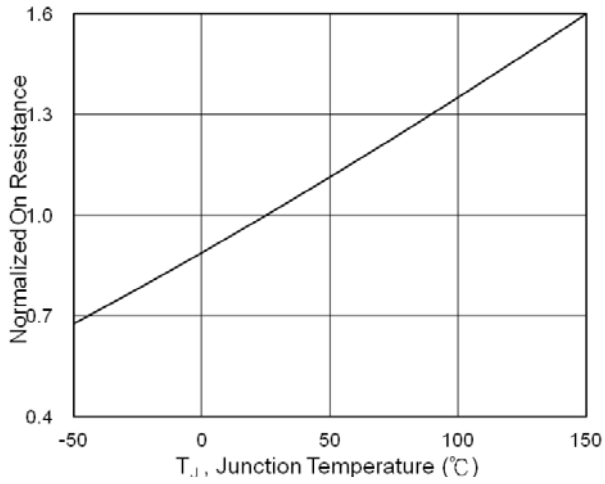


Figure 2: Gate-Charge Characteristics

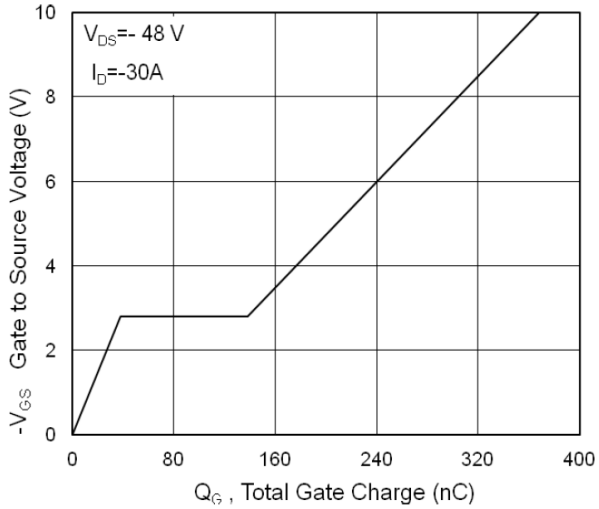


Figure 3: On-Resistance v.s Gate-Source

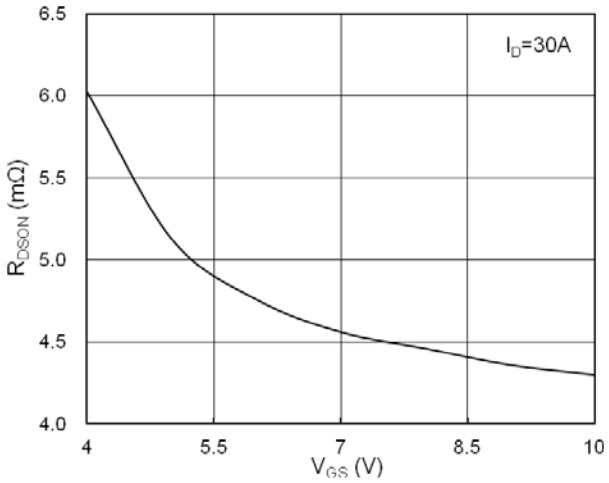


Figure 4: Typical Output Characteristics

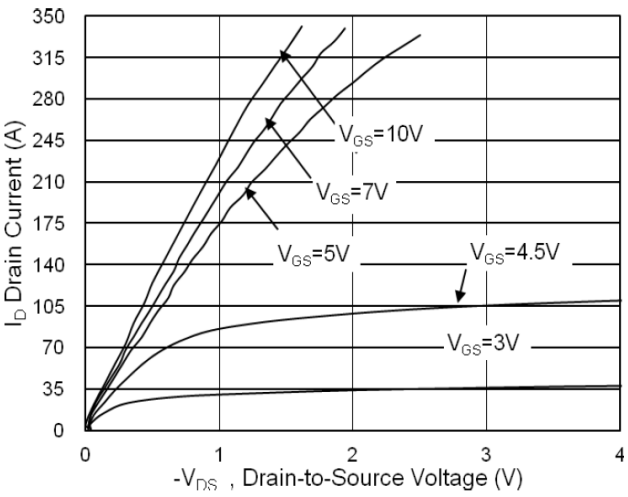


Figure 5: Normalized $V_{GS(th)}$ v.s T_J

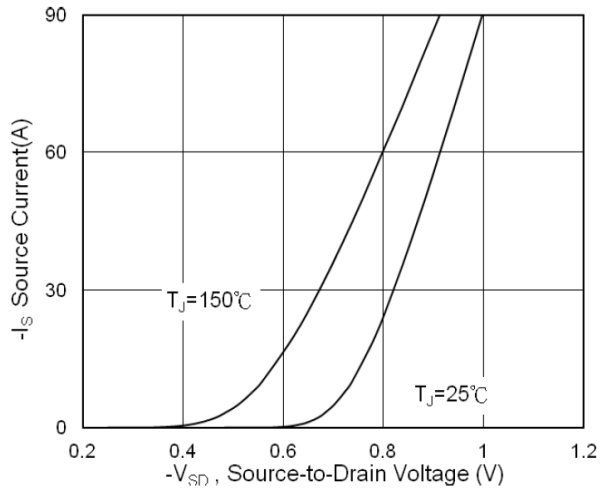


Figure 6: Drain-source on-state resistance

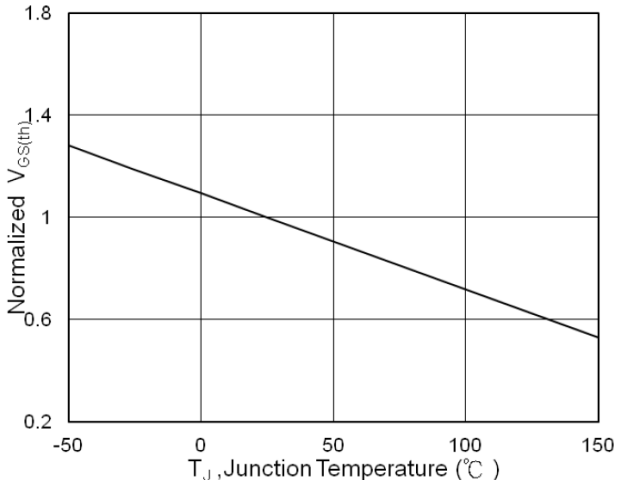


Figure 7: Safe Operating Area

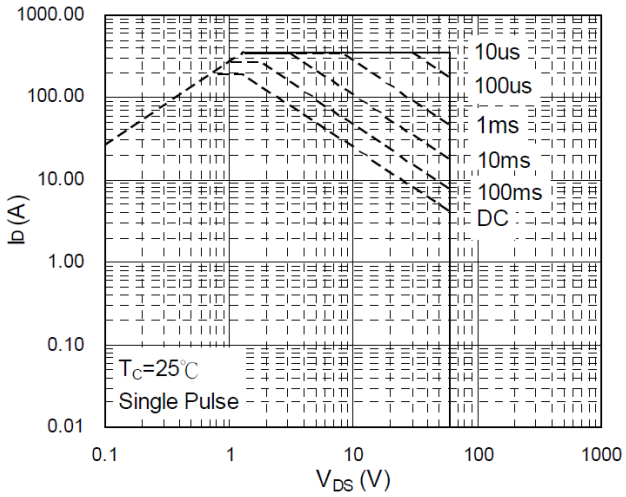


Figure 8: Capacitance

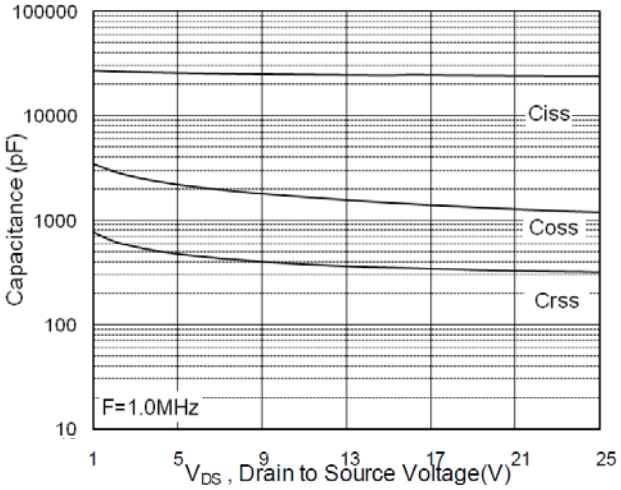
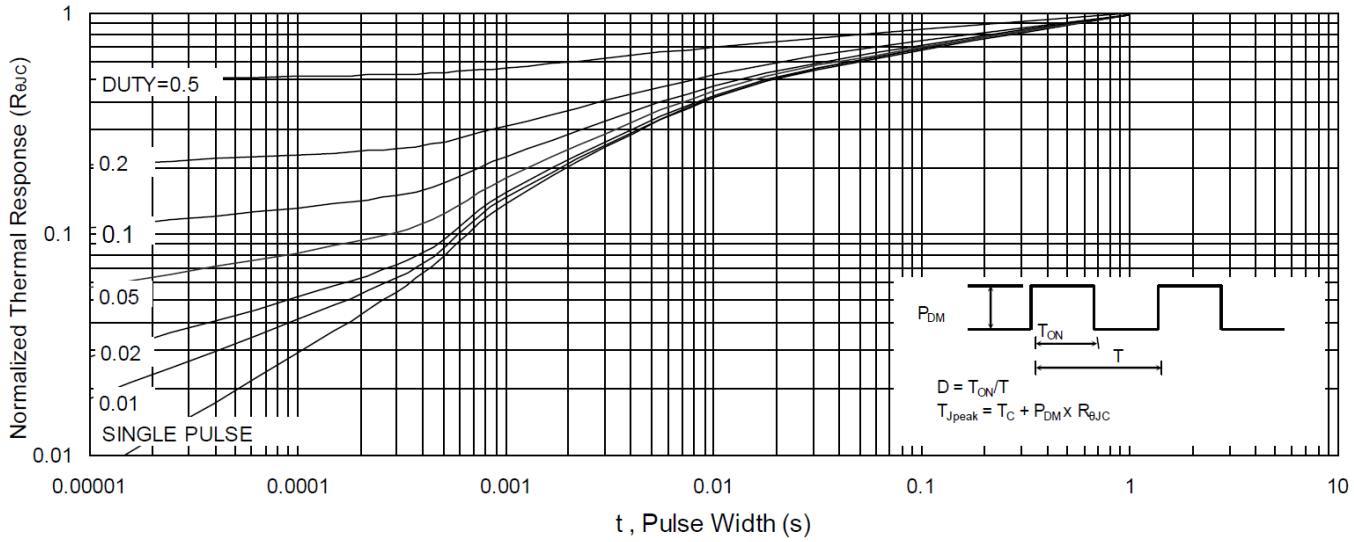
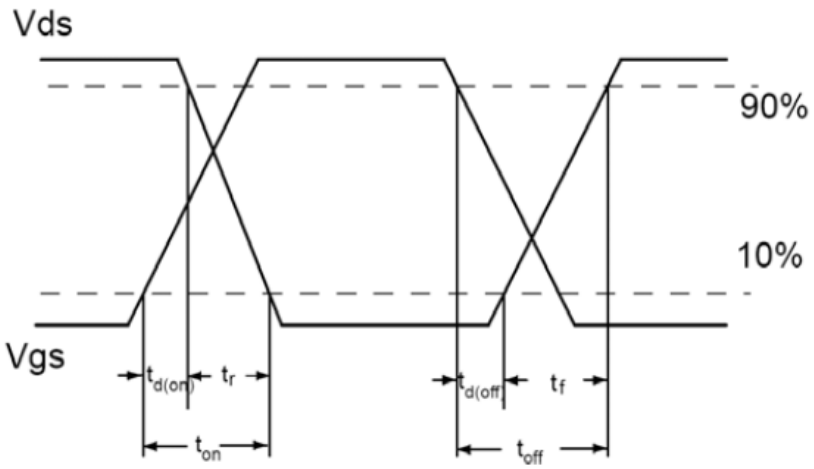


Figure 9: Normalized Maximum Transient Thermal Impedance

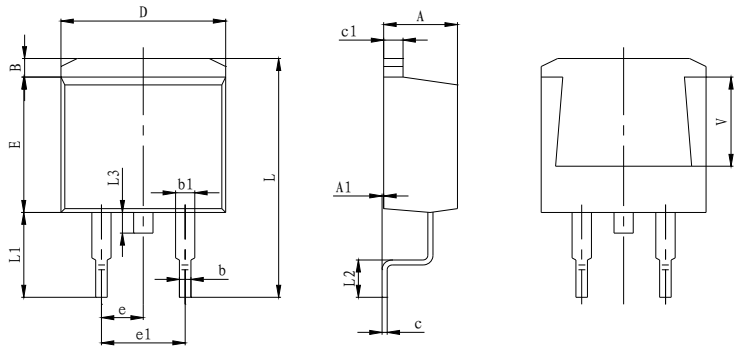


Switch Waveforms:



PACKAGE MECHANICAL DATA

TO-263-2 Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.170	1.370	0.046	0.054
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
L	15.050	15.450	0.593	0.608
L1	5.080	5.480	0.200	0.216
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
V	5.600 REF		0.220 REF	

Ordering information

Part number	Package	Marking	Packing	Quantity
ADM160P06G	TO-263-2	ADM160P06G	Tube	50pcs
			Embossed tape	800pcs