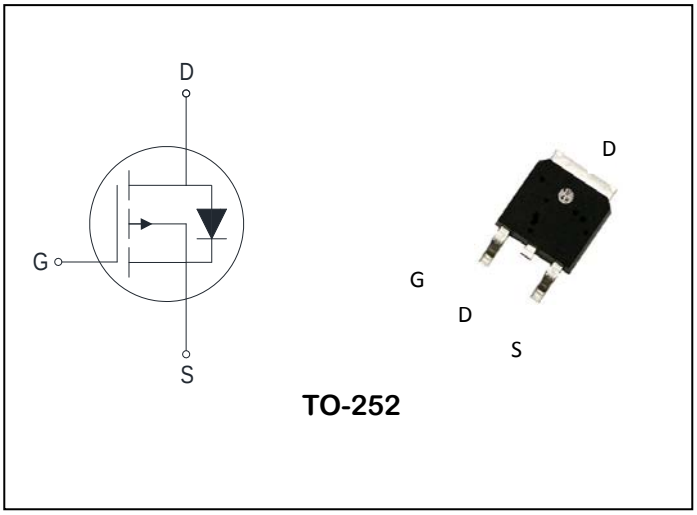
P-Channel Logic Level Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ)
-60V	-30A	40mΩ



Features:

- Low Gate Charge for Fast Switching Application
- Fast Switching
- High Power and current handing capability
- Green Device Available

Description:

The ADM30P06E is the high cell density trenched P-ch MOSFETs, design to provide excellent $R_{DS(ON)}$ with low gate charge.provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.These devices are well suited for high efficiency fast switching applications.

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 to150	°C
I_S	Diode Continuous Forward Current	T_C =25°C	-30	A
Mounted on Large Heat Sink				
I_{DM}	300μs Pulse Drain Current Tested (2)	T_C=25°C, V_{GS}=-10V	-120	A
I_D	Continuous Drain Current (1)	T_C=25°C, V_{GS}=-10V	-30	A
		T_C=100°C V_{GS}=-10V	-18	A
P_D	Maximum Power Dissipation	T_C=25°C	60	W

Thermal Characteristics

Symbol	Parameter	Ratings	Unit
R_{thJC}	Thermal resistance junction-case max (1)	2.72	°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}=-48V,V_{GS}=0V T_J=125°C	--	--	-10	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250uA	-1.0	-1.8	-3.0	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}=-4A	--	28	40	mΩ
		V_{GS}= -4.5V, I_{DS}=-3A	--	32	55	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}= -25V, Frequency=1.0MHz	--	3263	--	pF
C_{oss}	Output Capacitance		--	140	--	
C_{rss}	Reverse Transfer Capacitance		--	80	--	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time(1)	V_{DD}=-30V, I_D= -1A, V_{GS}= -10V, R_{GEN}=3Ω R_L=15Ω	--	8	--	ns
t_r	Turn-on Rise Time(1)		--	6	--	
$t_{d(OFF)}$	Turn-off Delay Time(1)		--	30	--	
t_f	Turn-off Fall Time(1)		--	7	--	
Q_g	Total Gate Charge(1)	V_{DS}=-20V, V_{GS}= -10V, I_{DS}=-4A	--	64	--	nC
Q_{gs}	Gate-Source Charge(1)		--	6.7	--	
Q_{gd}	Gate-Drain Charge(1)		--	13	--	
Diode Characteristics						
V_{SD}	Diode Forward Voltage(2)	I_{SD} =-1A, V_{GS} = 0V ,T_J=25°C	--	--	-0.9	V

NOTES:

1. Surface Mounted on FR4 Board, t ≤ 10 sec.

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

Typical Performance Characteristics

Figure 1: Continuous Drain Current vs.Tc

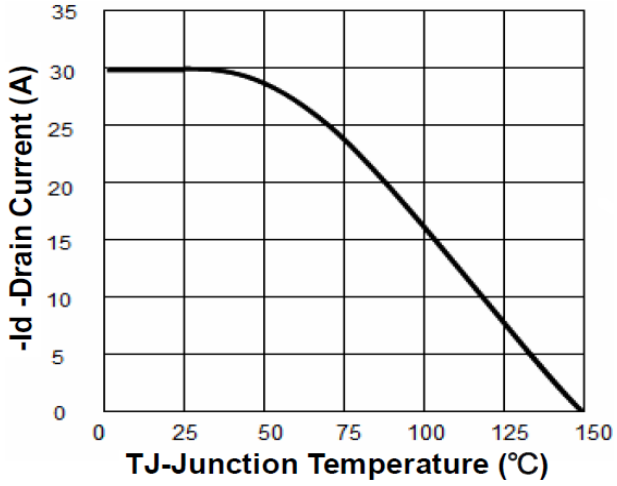


Figure 2: Normalized RDSON vs.TJ

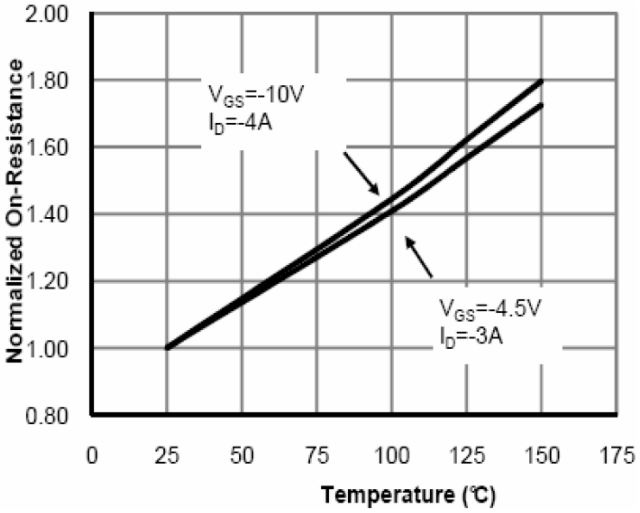


Figure 3: Normalized Vth vs.TJ

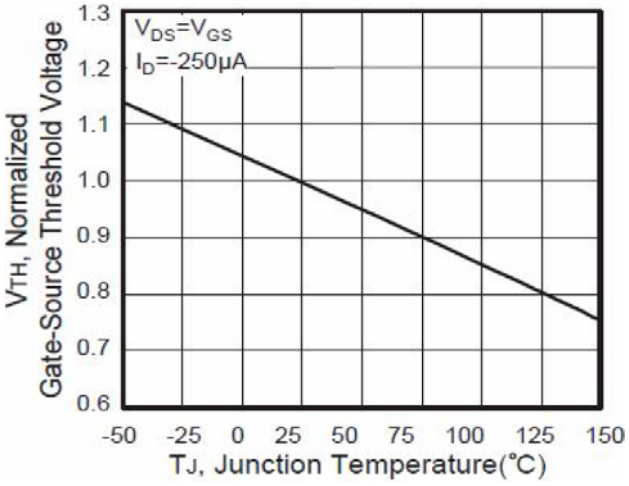


Figure 4: Gate Charge Waveform

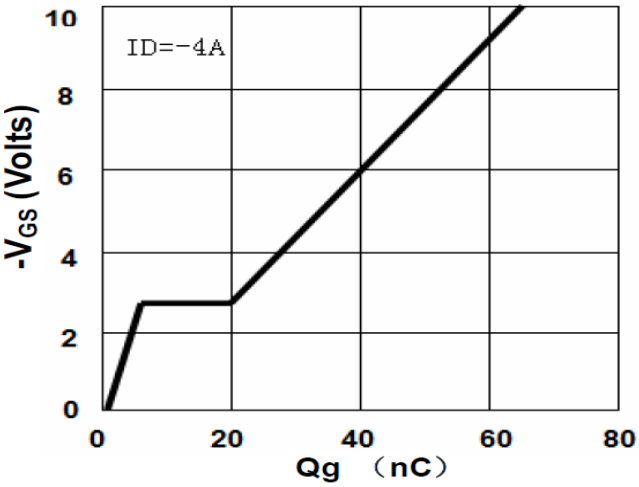


Figure 5: Capacitance

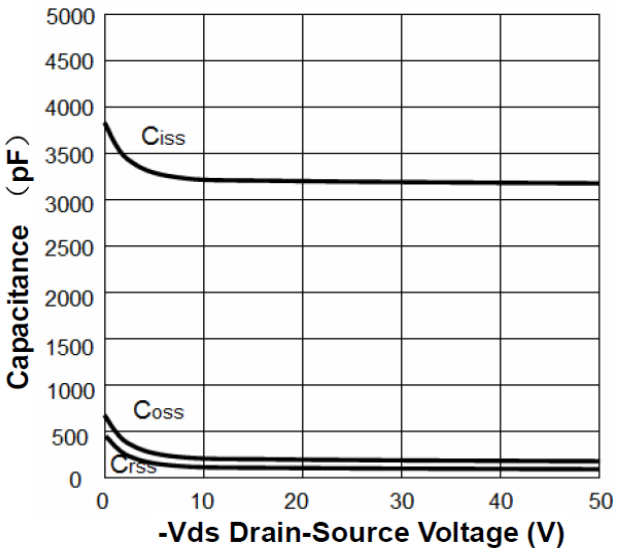


Figure 6: Maximum Safe Operation Area

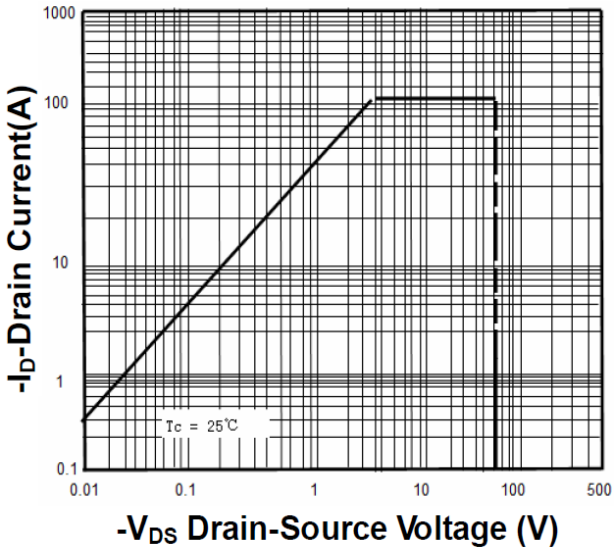


Figure 7: Switching Time Waveform

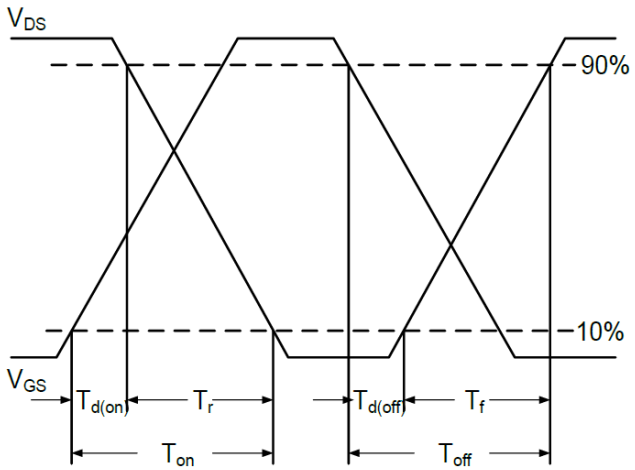
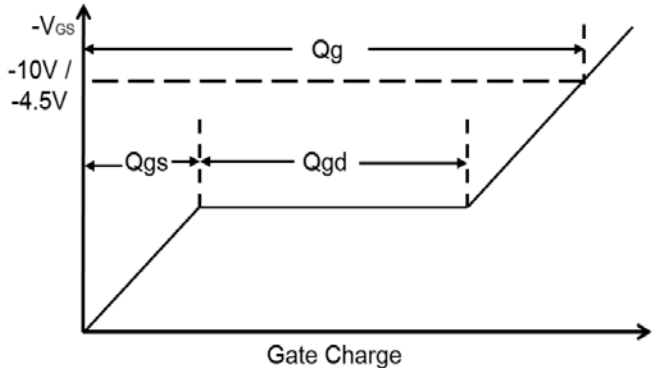
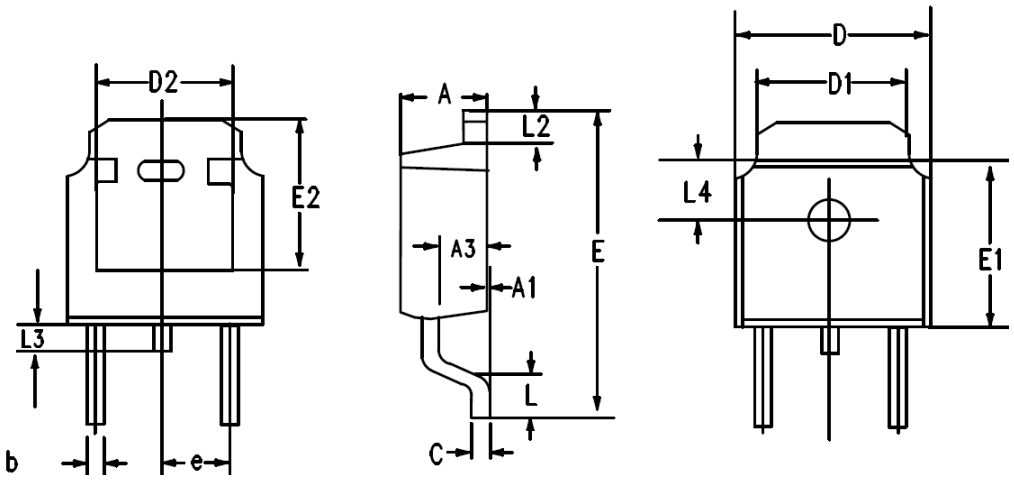


Figure 8: Gate Charge Waveform



PACKAGE MECHANICAL DATA

TO-252 Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
A3	1.020	1.120	0.040	0.044
b	0.740	0.820	0.029	0.032
c	0.510	0.580	0.020	0.023
D	6.500	6.700	0.256	0.263
D1	5.200	5.400	0.205	0.213
D2	4.830REF.		0.190REF.	
E	9.900	10.300	0.390	0.405
E1	6.000	6.200	0.236	0.244
E2	5.300 REF.		0.208 REF.	
e	2.286TYP.		0.090 TYP.	
L	1.400	1.600	0.055	0.063
L2	0.900	1.250	0.035	0.049
L3	0.600	1.000	0.024	0.039
L4	1.700	1.900	0.066	0.075