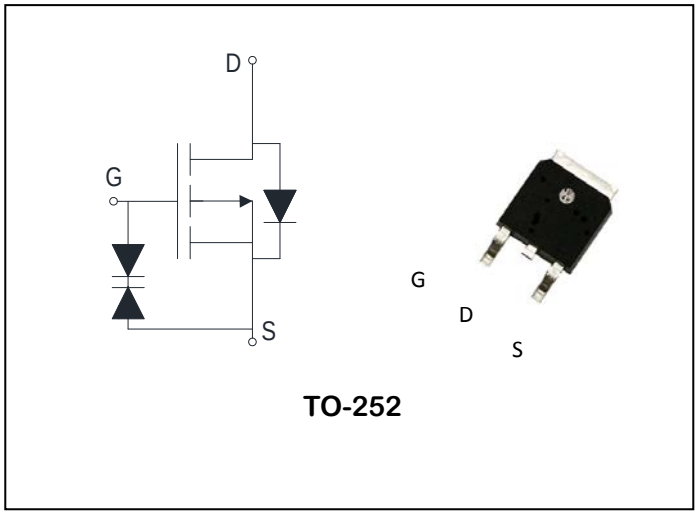
P-Channel Logic Level Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ)
-100V	-13A	-200mΩ



TO-252

Features:

- Low Gate Charge for Fast Switching Application
- Low $R_{DS(ON)}$ to Minimize Conductive Loss
- Reliable and Rugged
- 100% EAS Guaranteed
- It is ESD protested

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

Symbol	Parameter		Ratings	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		-100	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	-13	A
Mounted on Large Heat Sink				
I_{DM}	300μs Pulse Drain Current Tested (2)	T_C=25°C, V_{GS}=-10V	-30	A
I_D	Continuous Drain Current (1)	T_C=25°C, V_{GS}=-10V	-13	A
P_D	Maximum Power Dissipation	T_C=25°C	40	W

Thermal Characteristics

Symbol	Parameter	Ratings	Unit
R_{thJC}	Thermal resistance junction-case max (1)	3.13	°C/W
R_{thJA}	Thermal resistance junction-ambient max (1)	60	°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	-100	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= -100V, V_{GS}=0V T_J=25°C	--	--	-1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250uA	-1.0	-1.9	-3.0	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	--	--	±10	uA
$R_{DS(ON)}$	Drain-SourceOn-stateResistance(2)	V_{GS}= -10V, I_{DS}=-13A	--	170	200	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}= -25V, Frequency=1.0MHz	--	760	--	pF
C_{oss}	Output Capacitance		--	260	--	
C_{rss}	Reverse Transfer Capacitance		--	170	--	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time(1)	V_{DD}=-50V, I_D= -10A, V_{GS}= -10V, R_{GEN}=9.1Ω	--	14	--	ns
t_r	Turn-on Rise Time(1)		--	18	--	
$t_{d(OFF)}$	Turn-off Delay Time(1)		--	50	--	
t_f	Turn-off Fall Time(1)		--	18	--	
Q_g	Total Gate Charge(1)	V_{DS}=-50V, V_{GS}= -10V, I_{DS}=-10A	--	25	--	nC
Q_{gs}	Gate-Source Charge(1)		--	5	--	
Q_{gd}	Gate-Drain Charge(1)		--	7	--	
Avalanche Characteristics						
EAS	Single Pulse Avalanche Energy (3)	V_{DD}=50V,L=0.5mH ,V_{GS}=-10V,R_g=25Ω, T_J=25°C		110		mJ
Diode Characteristics						
V_{SD}	Diode Forward Voltage(2)	I_{SD} =-10A,V_{GS} = 0V T_J=25°C	--	--	-1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=-10A, dI_{SD}/dt=100A/μs	--	35	--	ns
q_{rr}	Reverse Recovery Charge		--	46	--	nC

NOTES:

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

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

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

Typical Performance Characteristics

Figure 1: On-Region Characteristics

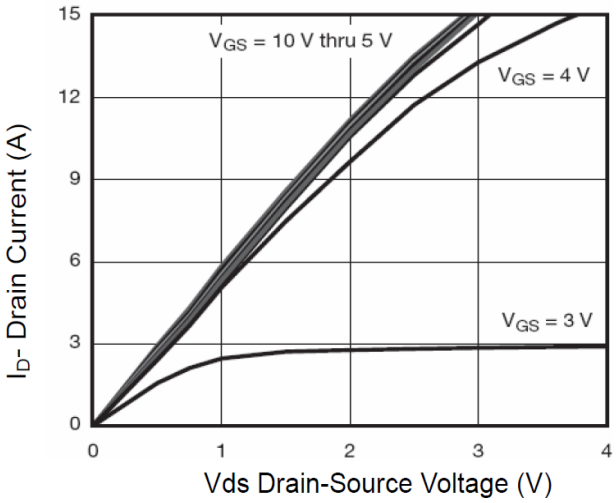


Figure 2: Transfer Characteristics

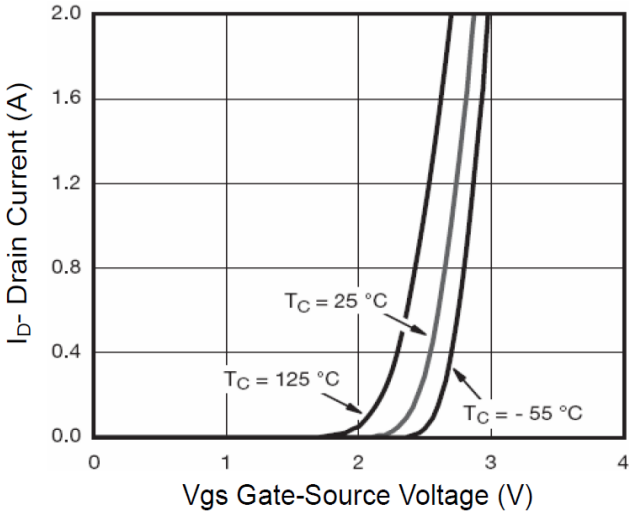


Figure 3: Rdson-Drain Current

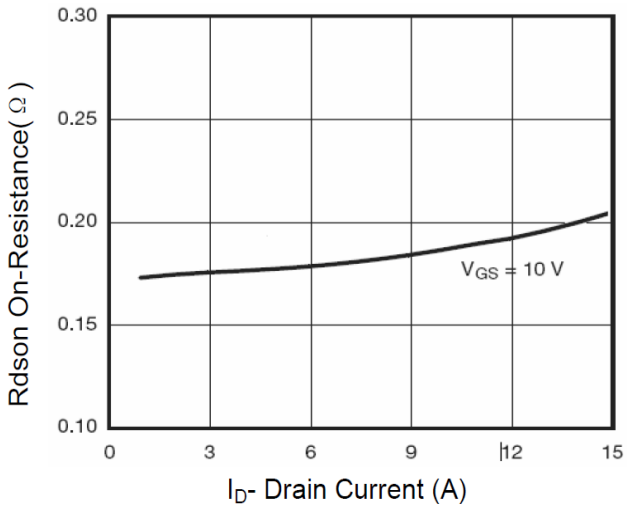


Figure 4: Normalized On-Resistance Vs. Tj

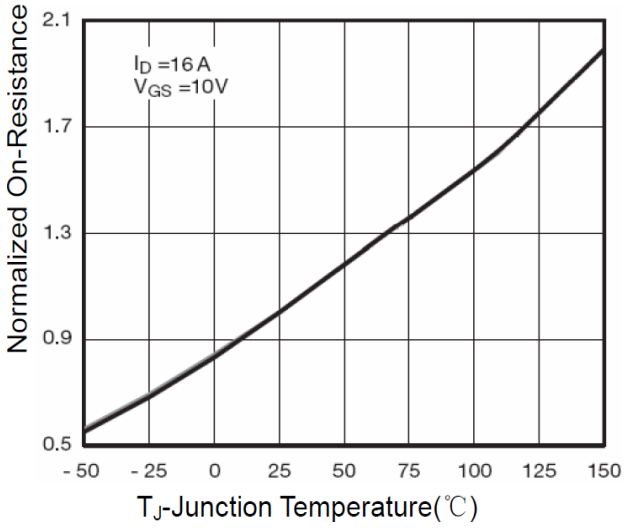


Figure 5: Source- Drain Diode Forward

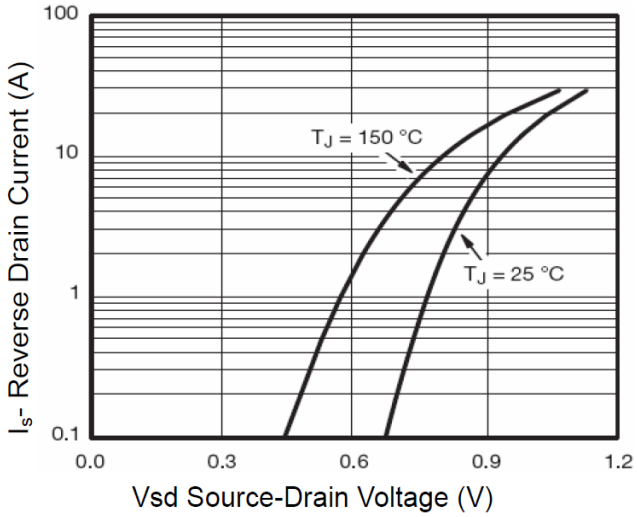


Figure 6: Gate Charge Characteristics

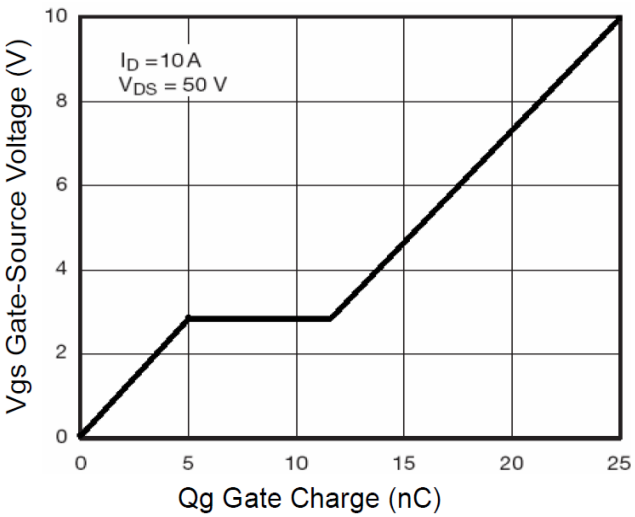


Figure 7: Capacitance vs Vds

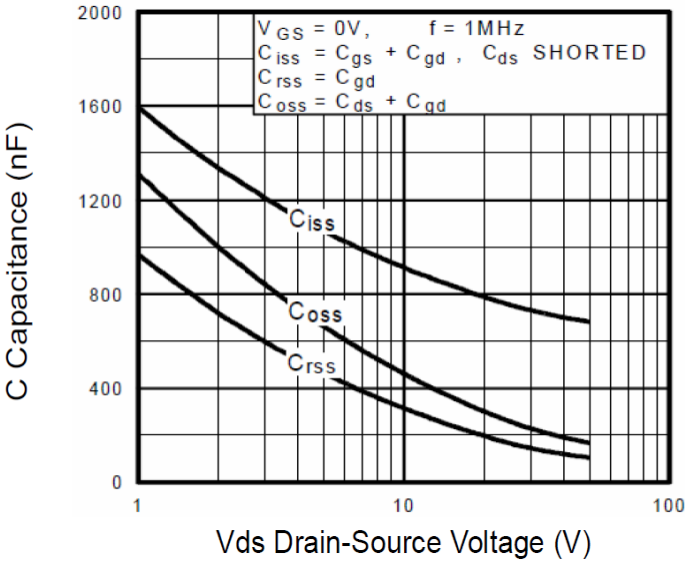


Figure 8: Safe Operation Area

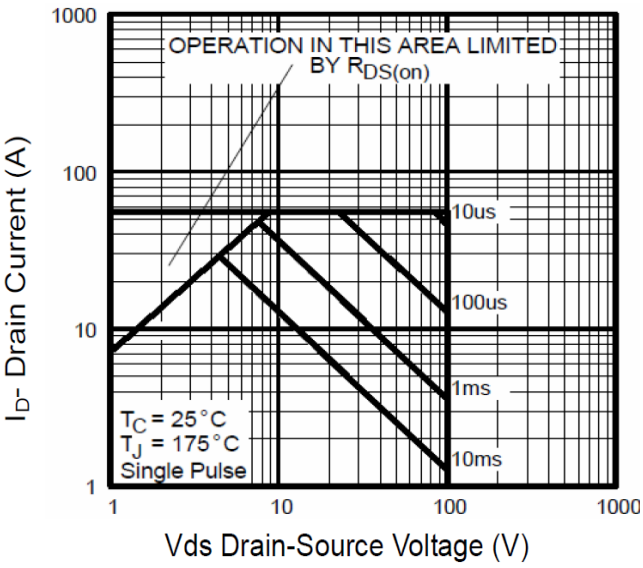
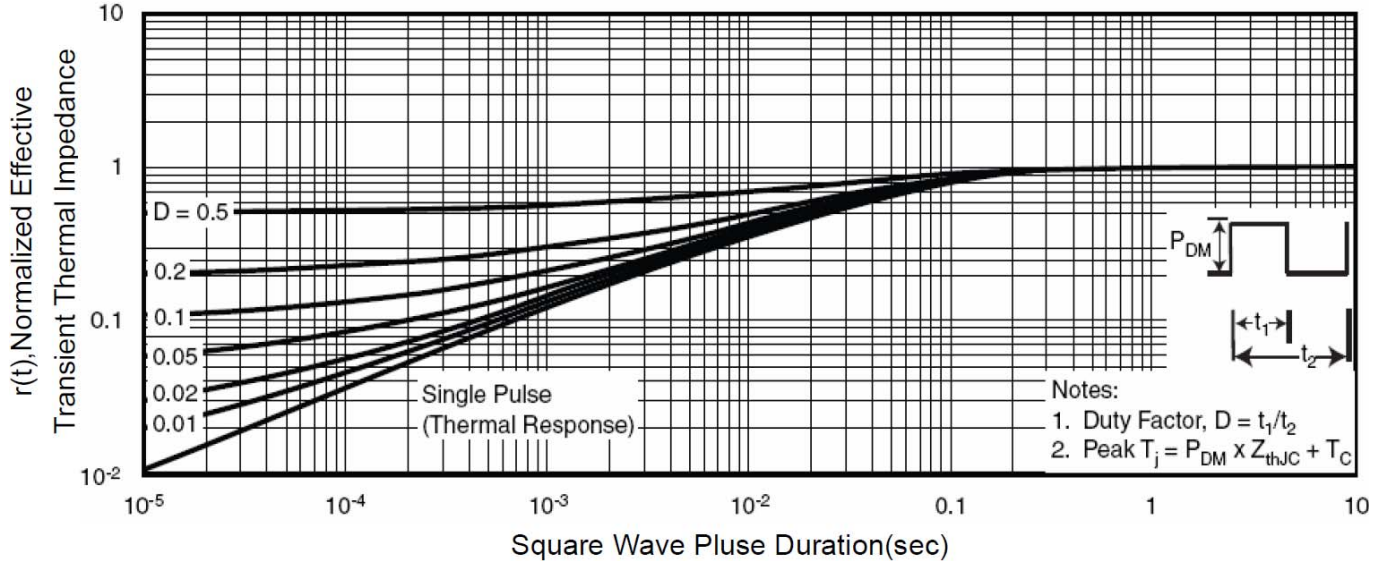
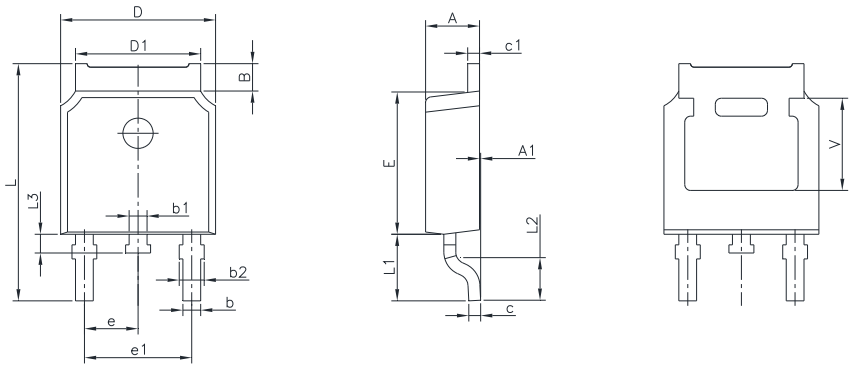


Figure 9: Normalized Maximum Transient Thermal Impedance



PACKAGE MECHANICAL DATA

TO-252-2 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
B	1.070	1.220	0.042	0.048
b	0.720	0.850	0.028	0.033
b1	0.720	0.850	0.028	0.033
c	0.450	0.620	0.017	0.024
c1	0.450	0.620	0.017	0.024
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.900	6.200	0.232	0.244
e	2.300 TYP.		0.091 TYP.	
e1	4.500	4.700	0.177	0.185
L	9.500	10.60	0.374	0.396
L1	2.550	2.900	0.100	0.114
L2	1.400	1.780	0.055	0.070
L3	0.600	0.900	0.024	0.035
V	3.950 REF.		0.155 REF.	

Ordering information

Part number	Package	Marking	Packing	Quantity
ADM13P10E	TO-252-2	ADM13P10E	Tube	80pcs
			Embossed tape	2500pcs

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