P-Channel Logic Level Enhancement Mode Field Effect Transistor

TO252

PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ)
-100V	-28A	76mΩ

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		$\pm$20	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	T_C=25°C	-28	A
Mounted on Large Heat Sink				
I_{DM}	300µs Pulse Drain Current Tested[1]	T_C=25°C	-120	A
I_D	Continuous Drain Current	T_C=25°C	-28	A
		T_C=100°C	-16	A
P_D	Maximum Power Dissipation	T_C=25°C	150	W
		T_C=100°C	110	W

Thermal Characteristics

Symbol	Parameter	Ratings	Unit
R_{thJC}	Thermal resistance junction-case max	3	°C/W
R_{thJA}	Thermal resistance junction-ambient max	50	°C/W

1. Pulse width limited by maximum junction temperature.

ADM28P10E

Electrical Characteristics (T$_A$=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	--	--	-25	uA
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$=V$_{GS}$, I$_{DS}$=-250uA	-1	--	-3	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$_{DS}$=-15A	--	63	76	mΩ
		V$_{GS}$= -4.5V, I$_{DS}$=-8A	--	72	92	
Dynamic Characteristics						
C$_{iss}$	Input Capacitance	V$_{GS}$=0V,	--	2550	--	pF
C$_{oss}$	Output Capacitance	V$_{DS}$= -25V,	--	345	--	
C$_{rss}$	Reverse Transfer Capacitance	Frequency=1.0MHz	--	70	--	
Switching Characteristics						
t$_{d(ON)}$	Turn-on Delay Time(1)	V$_{DS}$ =-50V,	--	16	--	ns
t$_r$	Turn-on Rise Time(1)	I$_D$= -18A, V$_{GS}$= -10V,	--	7	--	
t$_{d(OFF)}$	Turn-off Delay Time(1)	R$_{GEN}$=3.3 Ω	--	120	--	
t$_f$	Turn-off Fall Time(1)		--	25	--	
Q$_g$	Total Gate Charge(1)	V$_{DS}$=-80V, V$_{GS}$= -10V,	--	78	--	nC
Q$_{gs}$	Gate-Source Charge(1)	I$_{DS}$=-18A	--	8	--	
Q$_{gd}$	Gate-Drain Charge(1)		--	20	--	
Diode Characteristics						
V$_{SD}$	Diode Forward Voltage(2)	I$_{SD}$ = -16A, V$_{GS}$ = 0	--	--	-1.2	V
t$_{rr}$	Reverse Recovery Time	I$_{SD}$=-16A, dI$_{SD}$/dt=100A/μs	--	30	--	ns
q$_{rr}$	Reverse Recovery Charge		--	100	--	nC

NOTES:

1.   Independent of operating temperature.

2.   Pulse Test : Pulse width ⩽ 300μs, Duty cycle ⩽ 2%

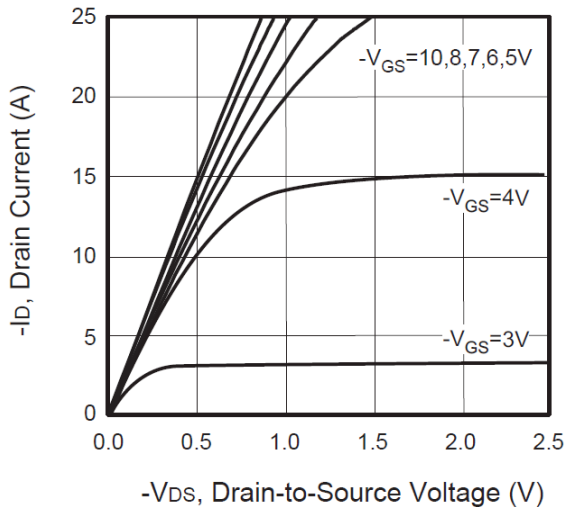## Typical Performance Characteristics

Figure 1: On-Region Characteristics
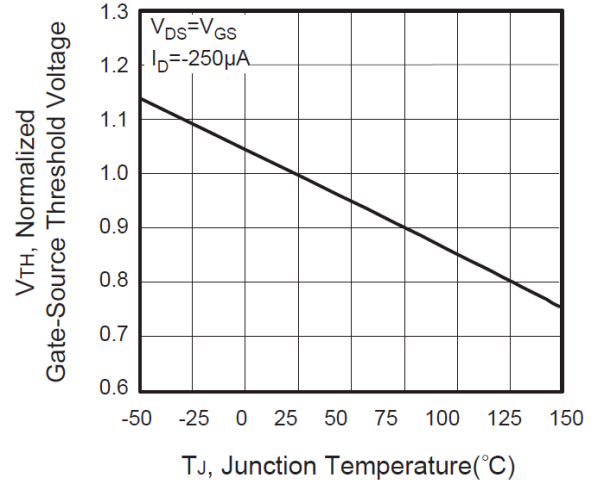

Figure 2: Gate Threshold Variation with Temperature
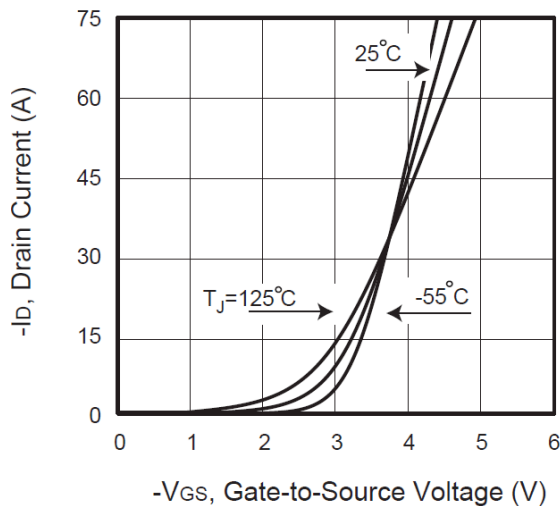

Figure 3: Transfer Characteristics

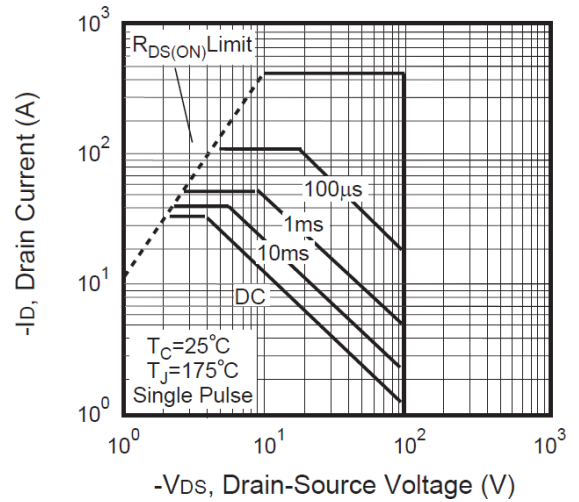**Figure 4: Maximum Safe Operating Area**
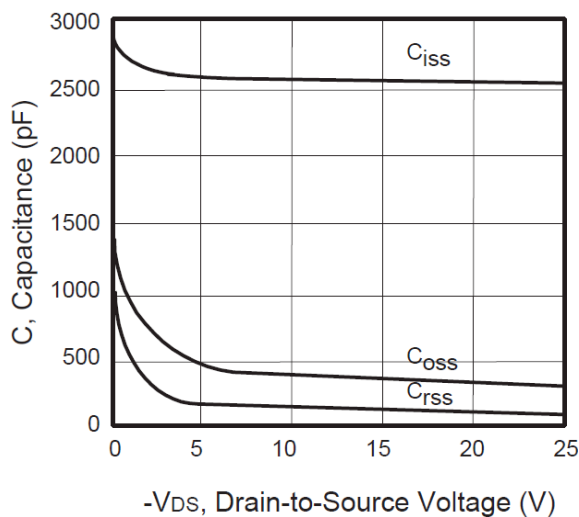

Figure 5: Capacitance Characteristics
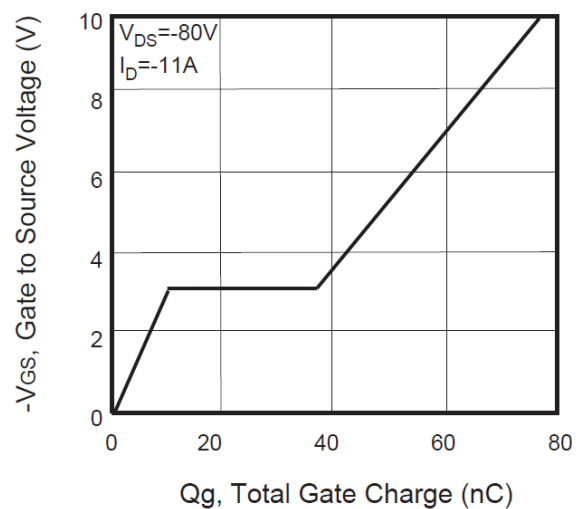

Figure 6: Gate Charge Characteristics

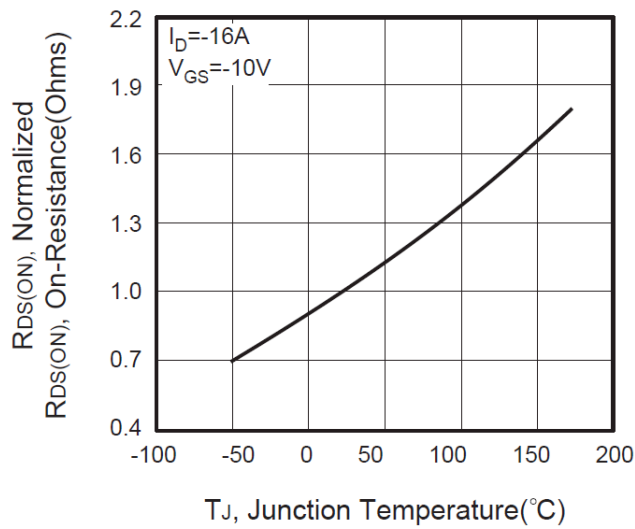**Figure 7: On-Resistance Variation vs.Temperature**

Figure 8: Body Diode Forward Voltage

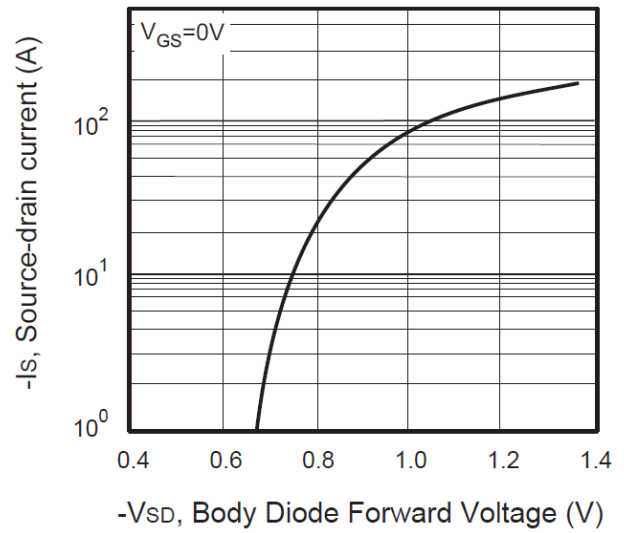**Figure 9. Transient Thermal Response Curve**

1. $R_{\theta JC}(t)=r(t) * R_{\theta JC}$
2. $R_{\theta JC}=$See Datasheet
3. $T_{JM}-T_C = P* R_{\theta JC}(t)$
4. Duty Cycle, $D=t1/t2$

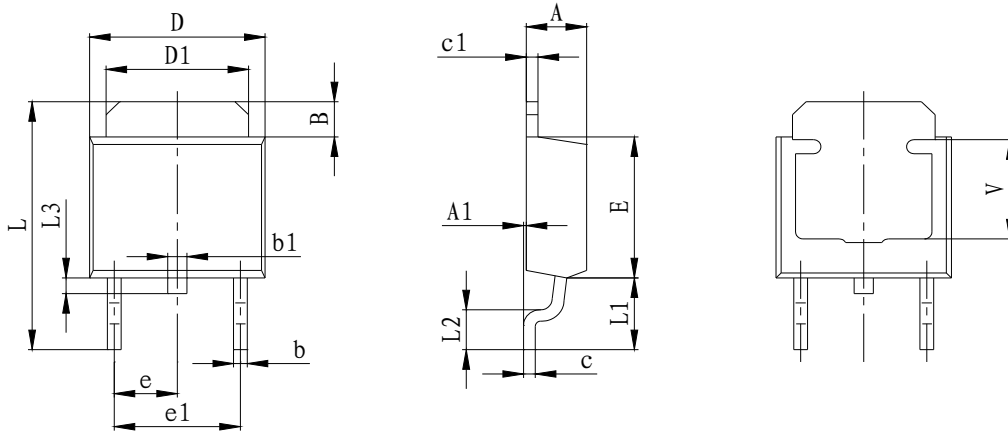**PACKAGE MECHANICAL DATA**

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
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300 TYP.		0.091 TYP.	
e1	4.500	4.700	0.177	0.185
L	9.500	9.900	0.374	0.390
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	3.800 REF.		0.150 REF.	