ACE7436M

N-Channel 30-V MOSFET

Description

The ACE7436M uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. This device is suitable for use as a high side switch in SMPS and general purpose applications.

Features

- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

Applications

- DC/DC Conversion
- Power Routing
- Motor Drives

Absolute Maximum Ratings

Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [a]	T_A=25°C	I_D	27	A
	T_A=70°C		22	
Pulse Drain Current [b]		I_{DM}	100	
Continuous Drain Current (Diode Continuous) [a]		I_S	6.7	A
Power Dissipation [a]	T_A=25°C	P_D	5	W
	T_A=70°C		3.2	
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55 to 150	°C

Parameter		Symbol	Maximum	Units
Maximum Junction-to-Ambient [a]	t≦10s	$R_{\theta JA}$	25	℃/W
	Steady State		65	℃/W

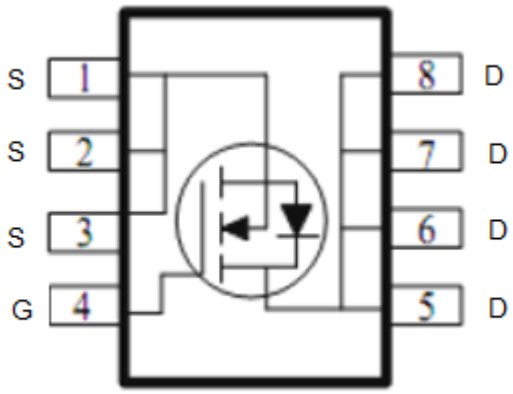
Notes

a. Surface Mounted on 1” x 1” FR4 Board.

b. Pulse width limited by maximum junction temperature

Packaging Type

DFN5*6-8L



Ordering information

ACE7436M PN + H

- Halogen - free
- Pb - free
- PN : DFN5*6-8L

Electrical Characteristics T_A=25 °C unless otherwise noted

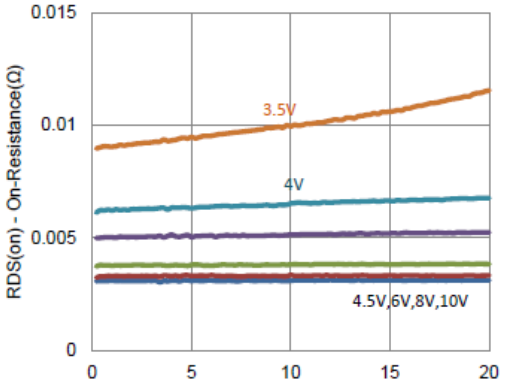
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Gate Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	1			V
Gate Body Leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V, V_{GS}=0V			1	uA
		V_{DS}=24V, V_{GS}=0V, T_J=55℃			10	
On-State Drain-Current [a]	$I_{D(on)}$	V_{DS}=5V, V_{GS}=10V	40			A
Static Drain-Source On-Resistance [a]	$r_{DS(ON)}$	V_{GS}=10V,I_D=20A			4.6	mΩ
		V_{GS}=4.5V,I_D=16A			5.5	
Forward Transconductance [a]	g_{fS}	V_{GS}=15V,I_D=20A		12		S
Diode Forward Voltage [a]	V_{SD}	I_S=3.4A ,V_{GS}=0V		0.76		V
Dynamic [b]						
Total Gate Charge	Q_g	V_{DS}=15V, V_{GS}=4.5V, I_D=20A		35		nC
Gate-Source Charge	Q_{gs}			13		
Gate-Drain Charge	Q_{gd}			13		
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=15V, ,R_L=0.8Ω I_D=20A,V_{GEN}=10V R_{GEN}=6Ω,		11		ns
Rise Time	t_f			16		
Turn-Off Delay Time	$t_{d(off)}$			76		
Fall Time	t_f			27		
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V f=1MHz		3876		pF
Output Capacitance	C_{oss}			410		
Reverse Transfer Capacitance	C_{rss}			339		

Note:

a. Pulse test: PW <= 300us duty cycle <= 2%.

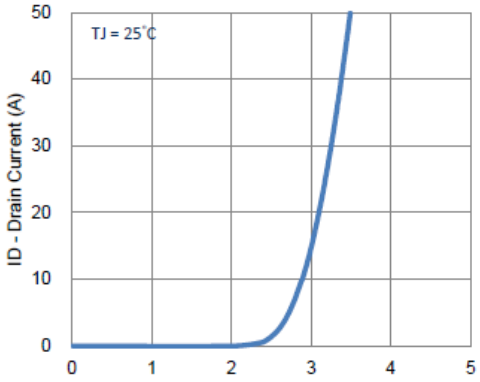
b. Guaranteed by design, not subject to production testing.

Typical Performance Characteristics



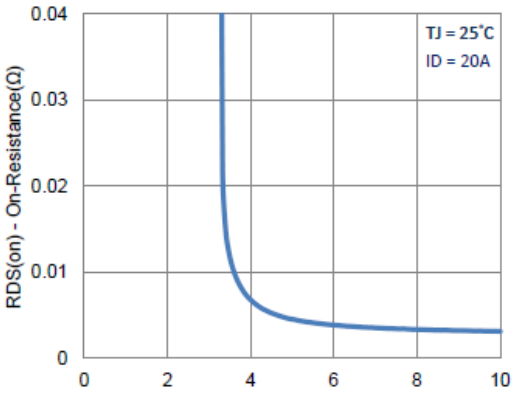
ID-Drain Current (A)

1. On-Resistance vs. Drain Current



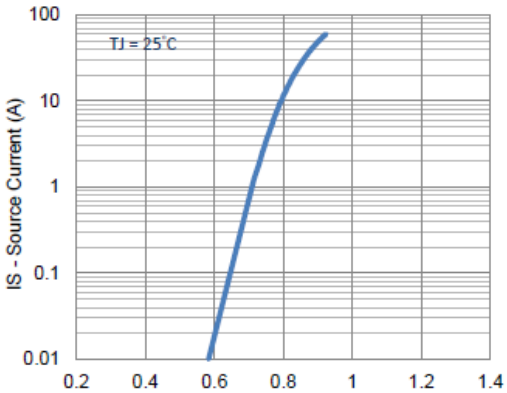
VGS - Gate-to-Source Voltage (V)

2. Transfer Characteristics



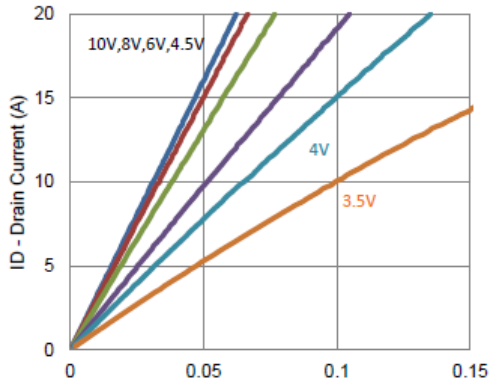
VGS - Gate-to-Source Voltage (V)

3. On-Resistance vs. Gate-to-Source Voltage



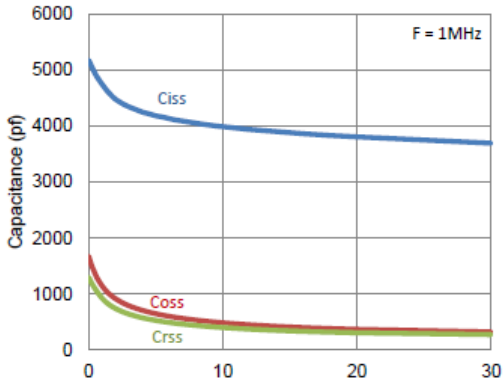
VSD - Source-to-Drain Voltage (V)

4. Drain-to-Source Forward Voltage



VDS - Drain-to-Source Voltage (V)

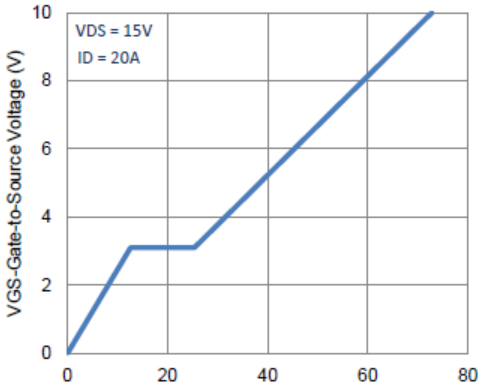
5. Output Characteristics



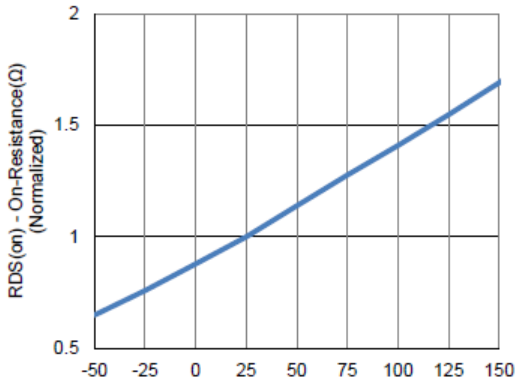
VDS-Drain-to-Source Voltage (V)

6. Capacitance

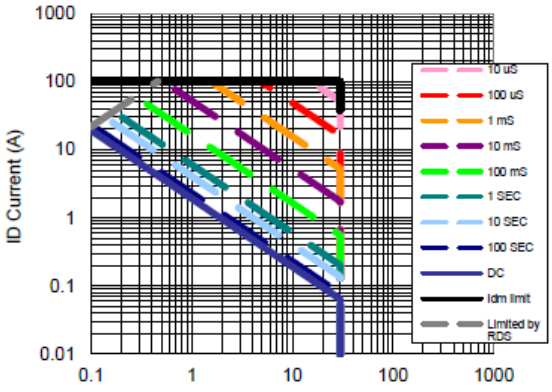
Typical Performance Characteristics



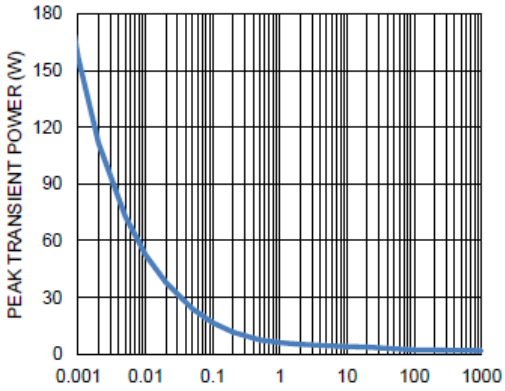
Qg - Total Gate Charge (nC)
7. Gate Charge



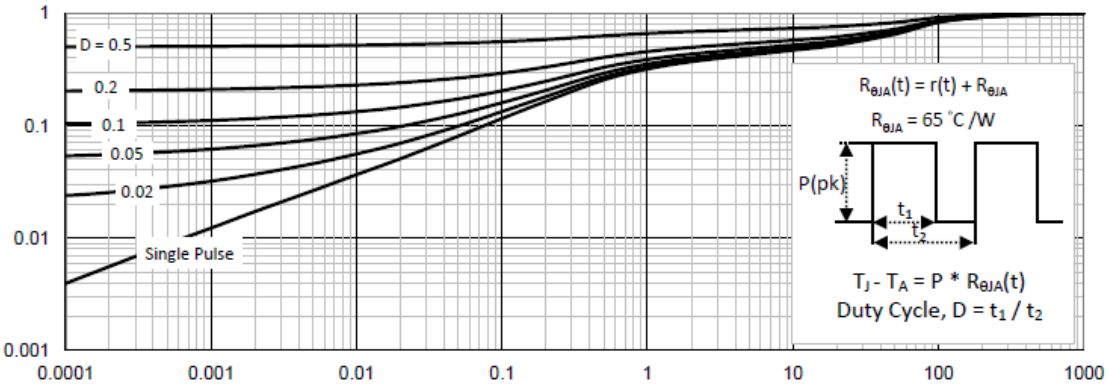
TJ -JunctionTemperature(°C)
8. Normalized On-Resistance Vs Junction Temperature



VDS Drain to Source Voltage (V)
9. Safe Operating Area



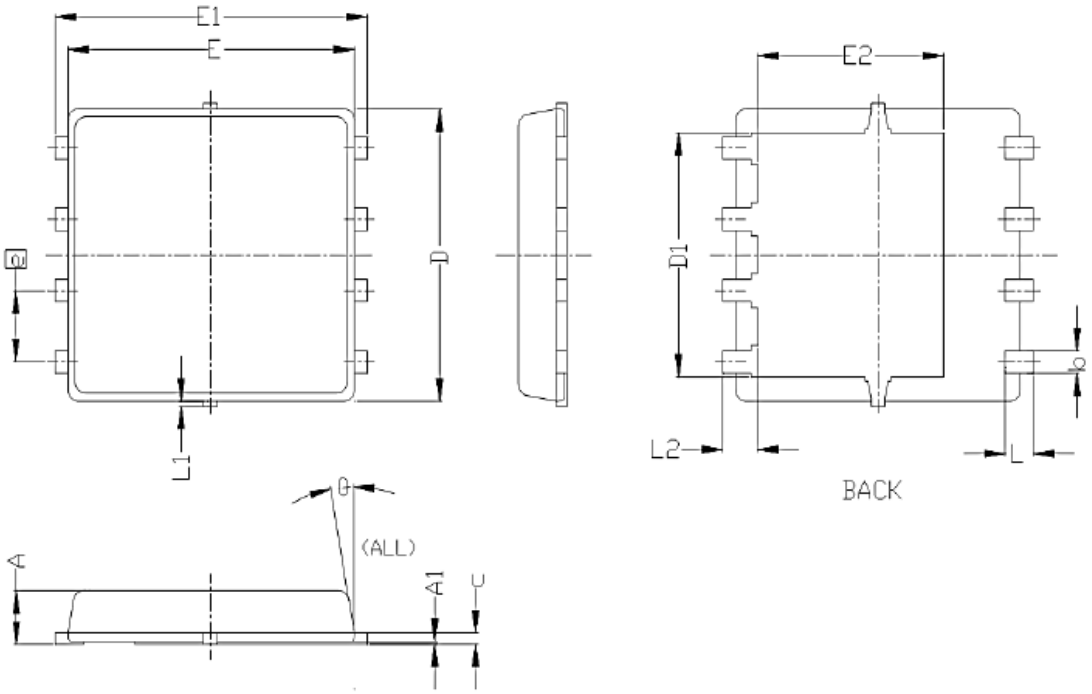
t1 TIME (SEC)
10. Single Pulse Maximum Power Dissipation



t1 TIME (sec)
11. Normalized Thermal Transient Junction to Ambient

Packing Information

DFN5*6-8L



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.85	0.95	1.00	0.033	0.037	0.039
A1	0.00		0.05	0.000		0.002
b	0.30	0.40	0.50	0.012	0.016	0.020
c	0.15	0.20	0.25	0.006	0.008	0.010
D	5.20 BSC			0.205 BSC		
D1	4.35 BSC			0.171 BSC		
E	5.55 BSC			0.219 BSC		
E1	6.05 BSC			0.238 BSC		
E2	3.62 BSC			0.143 BSC		
e	1.27 BSC			0.050 BSC		
L	0.45	0.55	0.65	0.018	0.022	0.026
L1	0		0.15	0		0.006
L2	0.68 REF			0.027 REF		
θ	0°		10°	0°		10°

Notes

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1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and shoes failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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