ACE7333M

P-Channel 30-V (D-S) MOSFET

Description

The ACE7333M 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

PRODUCT SUMMARY		
V_{DS} (V)	r_{DS}(on) (mΩ)	I_D(A)
-30	20 @ V_{GS} = -10V	-10.9
	36 @ V_{GS} = -4.5V	-8.1

Applications

- White LED boost converters
- Automotive Systems
- Industrial DC/DC Conversion Circuits

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	-10.9	A
	T_A=70°C		-8.2	
Pulse Drain Current [b]		I_{DM}	-50	
Continuous Drain Current (Diode Continuous) [a]		I_S	-4.5	A
Power Dissipation [a]	T_A=25°C	P_D	3.5	W
	T_A=70°C		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≦10sec	$R_{\theta JA}$	35	℃/W
	Steady State		81	℃/W

Notes

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

b. Pulse width limited by maximum junction temperature

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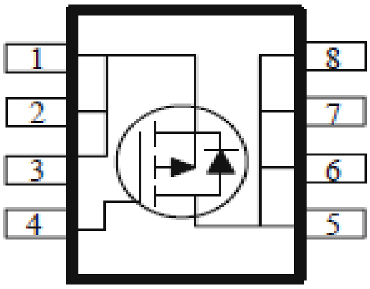
Packaging Type

DFN3*3-8L



Ordering information

ACE7333M NN + H

Halogen - free

Pb - free

NN : DFN3*3-8L

Electrical Characteristics

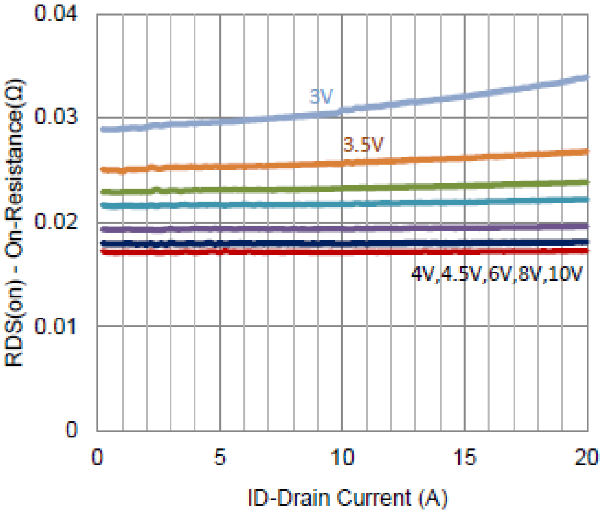
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Gate Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250uA	1			V
Gate Body Leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V, V_{GS}=0V			-1	uA
		V_{DS}=-24V, V_{GS}=0V, T_J=55℃			-25	
On-State Drain-Current [a]	$I_{D(on)}$	V_{DS}=-5V, V_{GS}=-10V	-15			A
Static Drain-Source On-Resistance [a]	$r_{DS(ON)}$	V_{GS}=-10V,I_D=-8.7A			20	mΩ
		V_{GS}=-4.5V,I_D=-7A			36	
Forward Transconductance [a]	g_{fS}	V_{DS}=-15V,I_D=-8.7A		20		S
Diode Forward Voltage [a]	V_{SD}	I_S=-2.3A ,V_{GS}=0V		-0.76		V
Dynamic [b]						
Total Gate Charge	Q_g	V_{DS}=-15V, V_{GS}=-4.5V, I_D=-8.7A		22		nC
Gate-Source Charge	Q_{gs}			6.5		
Gate-Drain Charge	Q_{gd}			9.8		
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=-15V, ,R_L=1.8Ω I_D=-8.7A ,V_{GEN}=-10V R_{GEN}=6Ω,		8		ns
Rise Time	t_r			35		
Turn-Off Delay Time	$t_{d(off)}$			85		
Fall Time	t_f			51		
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V f=1MHz		1794		pF
Output Capacitance	C_{oss}			242		
Reverse Transfer Capacitance	C_{rss}			224		

Note:

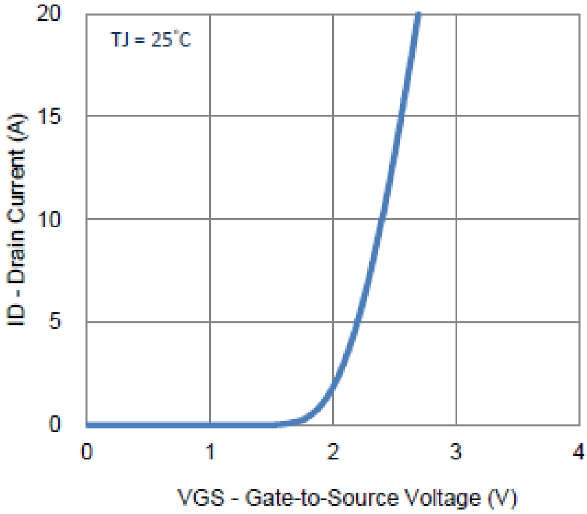
a. Pulse test: PW <= 300us duty cycle <= 2%.

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

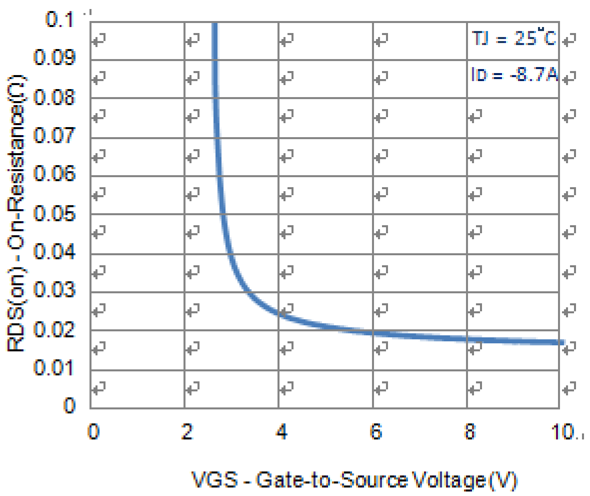
Typical Electrical Characteristics



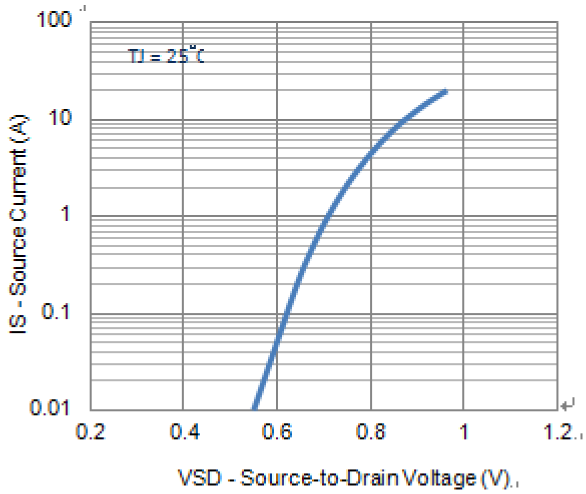
1. On-Resistance vs. Drain Current



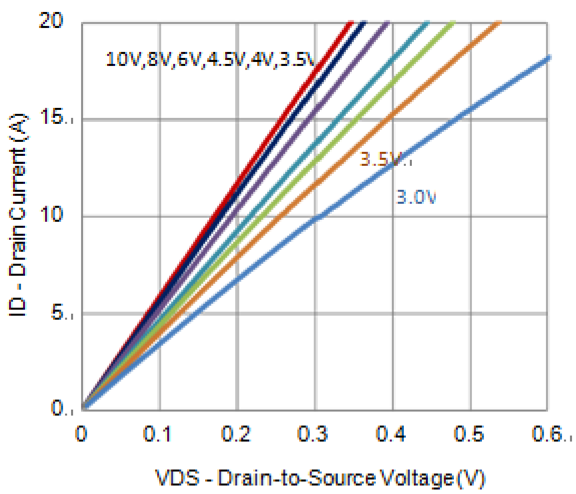
2. Transfer Characteristics



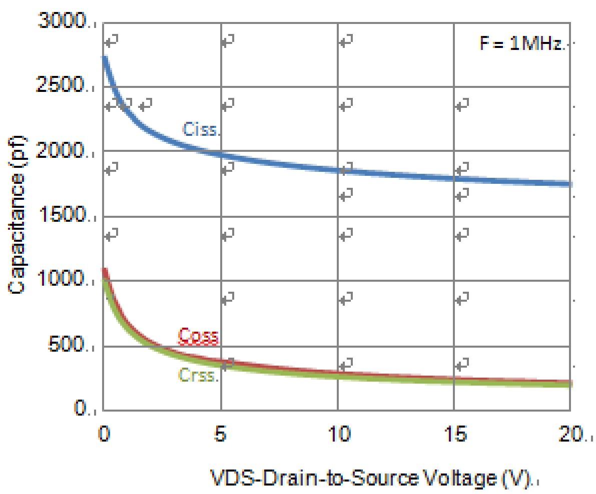
3. On-Resistance vs. Gate-to-Source Voltage



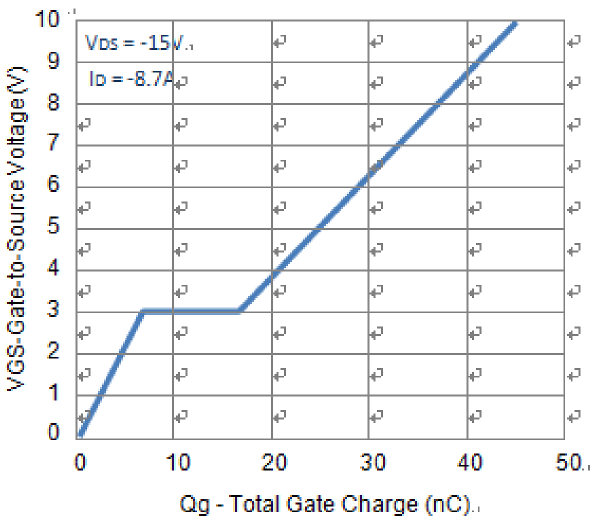
4. Drain-to-Source Forward Voltage



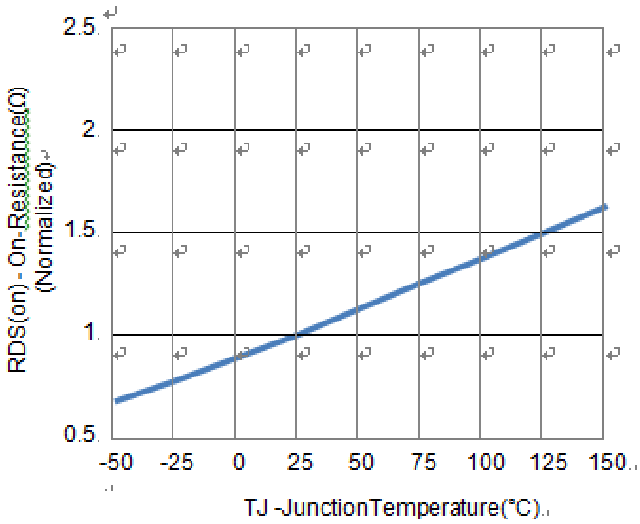
5. Output Characteristics



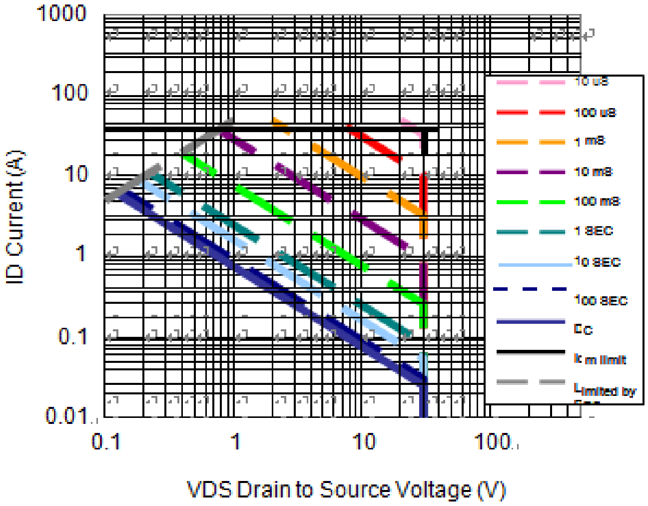
6. Capacitance



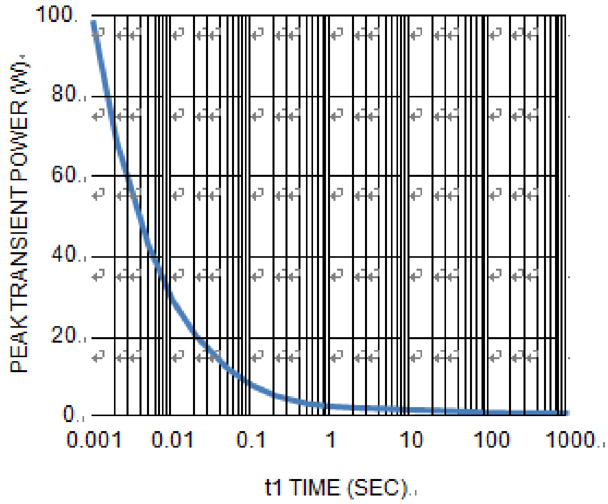
7. Gate Charge



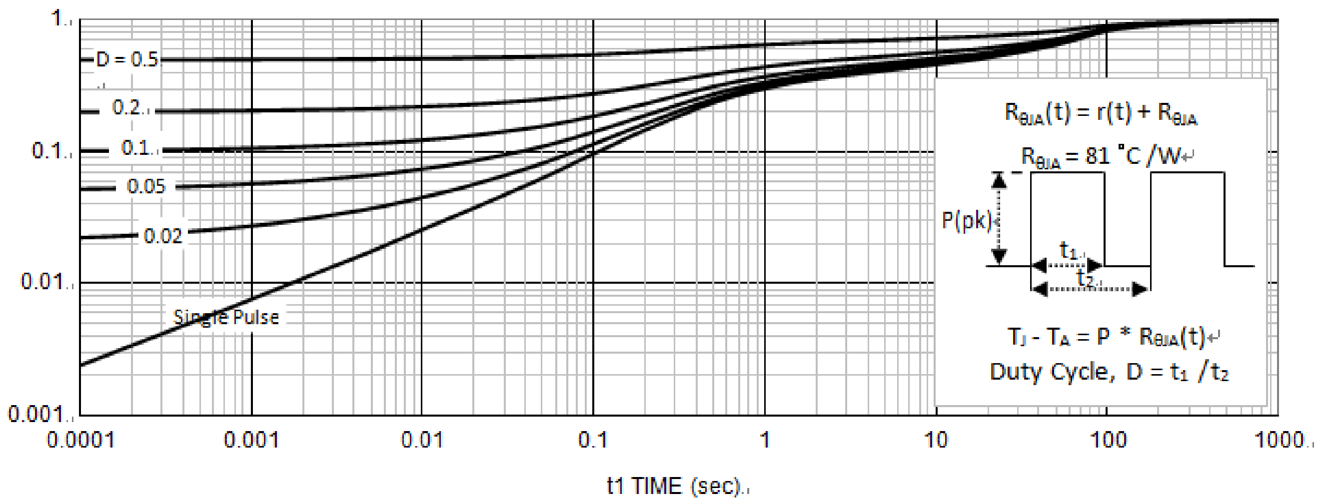
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area

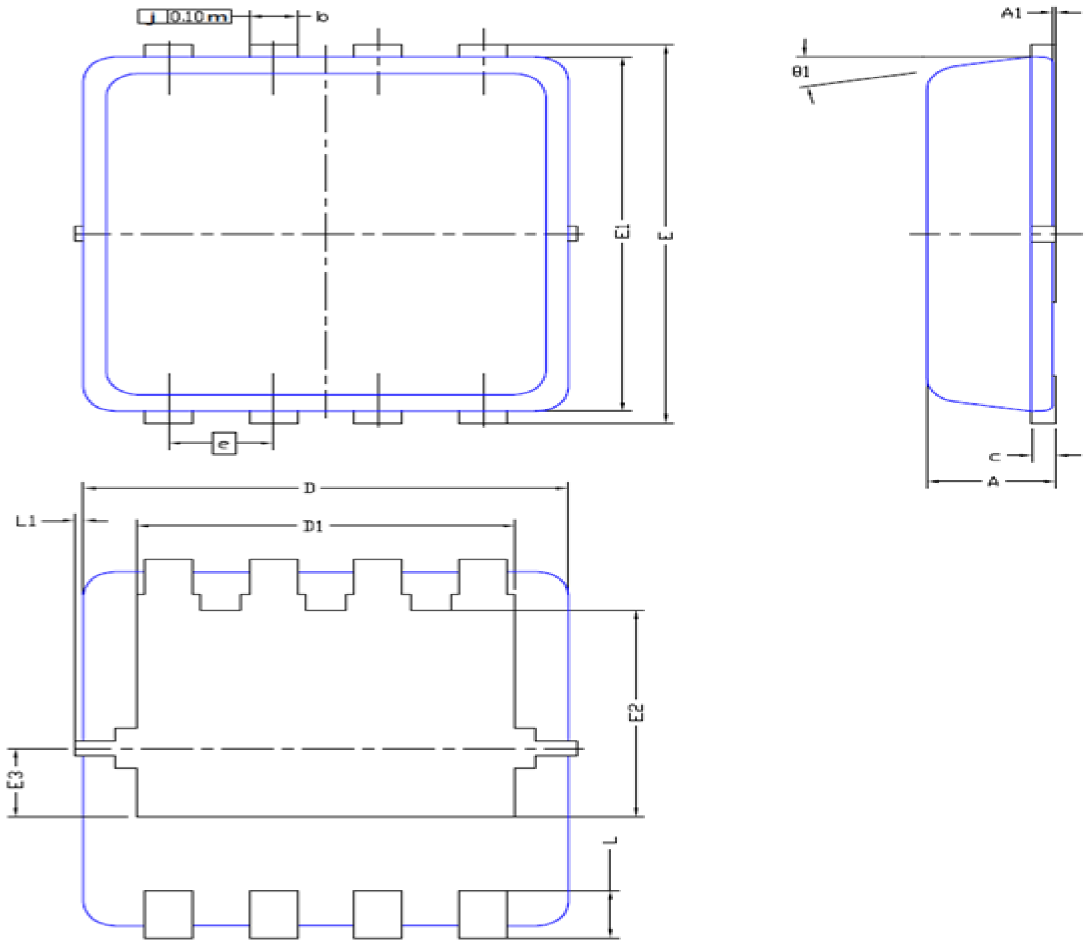


10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient

Packing Information
DFN3*3-8L



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.700	0.80	0.900	0.0276	0.0315	0.0354
A1	0.00		0.05	0.000		0.002
b	0.24	0.30	0.35	0.009	0.012	0.014
c	0.10	0.152	0.25	0.004	0.006	0.010
D	3.00 BSC			0.118 BSC		
D1	2.35 BSC			0.093 BSC		
E	3.20 BSC			0.126 BSC		
E1	3.00 BSC			0.118 BSC		
E2	1.75 BSC			0.069 BSC		
E3	0.575 BSC			0.023 BSC		
e	0.65 BSC			0.026 BSC		
L	0.45	0.55	0.65	0.018	0.022	0.026
L1	0		0.15	0		0.006
θ1	0°	10°	12°	0°	10°	12°

Notes

ACE does not assume any responsibility for use as critical components in life support devices or systems without the express written approval of the president and general counsel of ACE Electronics Co., LTD. As sued herein:

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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