ACE9006M03N

N-Channel 60-V MOSFET

Description

The ACE9006M03N uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for use as a load switch or in PWM applications. The source leads are separated to allow a Kelvin connection to the source, which may be used to bypass the source inductance.

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)
60	3 @ V_{GS} = 10V	120A
	4 @ V_{GS} = 5.5V	

Applications

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

Absolute Maximum Ratings

Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [a]	T_A=25℃	I_D	120	A
Pulsed Drain Current [b]		I_{DM}	360	A
Continuous Source Current (Diode Conduction) [a]		I_S	90	A
Power Dissipation [a]	T_A=25℃	P_D	300	W
Operating temperature / storage temperature		T_J/T_{STG}	-55~175	℃

THERMAL RESISTANCE RATINGS				
Parameter		Symbol	Maximum	Units
Maximum Junction-to-Ambient [a]	t <= 10 sec	$R_{θJA}$	62.5	°C/W
	Steady State		1	

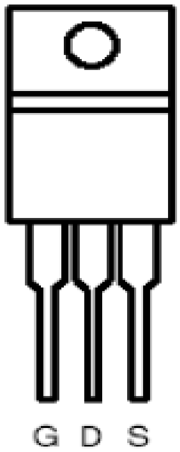
Notes

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

b. Pulse width limited by maximum junction temperature

Packaging Type

TO-220



Ordering information

ACE9006M03N XX + H

- H: Halogen - free
- +: Pb - free
- XX: ZM：TO-220

ACE9006M03N
N-Channel 60-V MOSFET

Electrical Characteristics

T_A=25℃, unless otherwise specified.

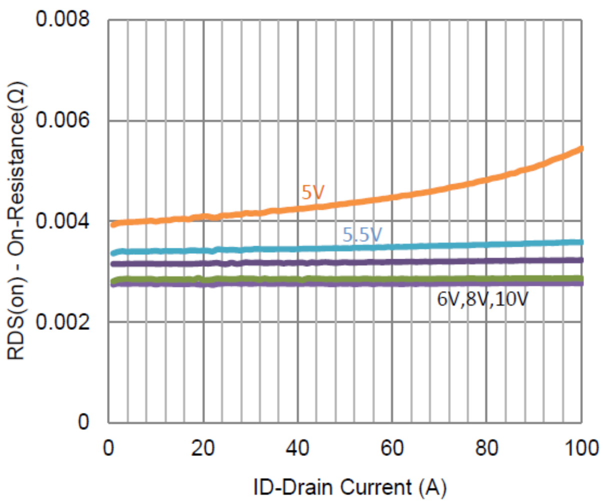
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250 uA	1			V
Gate-Body Leakage	I_{GSS}	V_{DS}= 0 V, V_{GS}= ±20 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 48 V, V_{GS} = 0 V			1	uA
		V_{DS} = 48 V, V_{GS} = 0 V, T_J = 55°C			25	
On-State Drain Current	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 10 V	120			A
Drain-Source On-Resistance	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 45 A			3	mΩ
		V_{GS} = 5.5 V, I_D = 44 A			4	
Forward Transconductance	g_{fs}	V_{DS} = 15 V, I_D = 20 A		35		S
Diode Forward Voltage	V_{SD}	I_S= 45 A, V_{GS} = 0 V		0.84		V
Dynamic						
Total Gate Charge	Qg	V_{DS}= 30 V, V_{GS} = 5.5 V, I_D= 20 A		161		nC
Gate-Source Charge	Qgs			58		
Gate-Drain Charge	Qgd			82		
Turn-On Delay Time	td(on)	V_{DS}= 30V, R_L= 1.5 Ω, I_D = 20 A, V_{GEN}= 10 V, R_{GEN}= 6 Ω		64		ns
Rise Time	tr			112		
Turn-Off Delay Time	td(off)			276		
Fall Time	tf			86		
Input Capacitance	Ciss	V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz		33061		pF
Output Capacitance	Coss			1181		
Reverse Transfer Capacitance	Crss			1135		

Note :

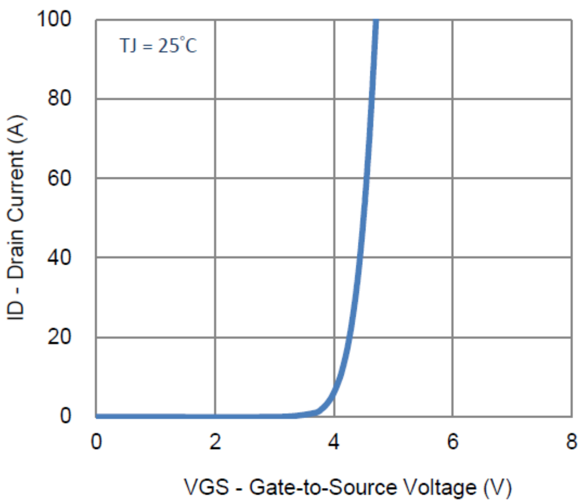
a. Pulse test: PW <= 300us duty cycle <= 2%.

b. Guaranteed by design, not subject to production testing

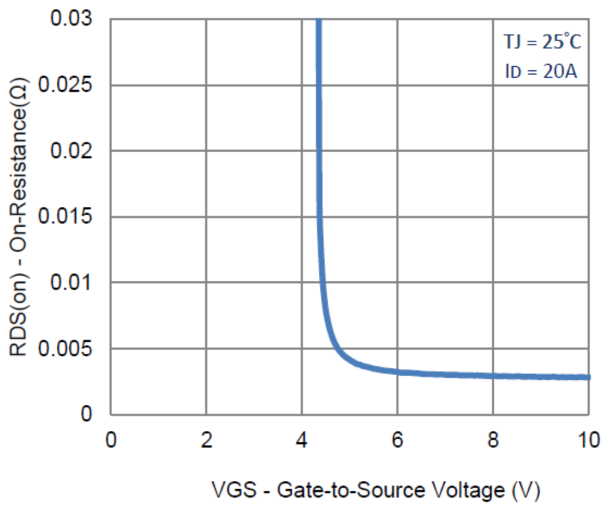
Typical Performance Characteristics



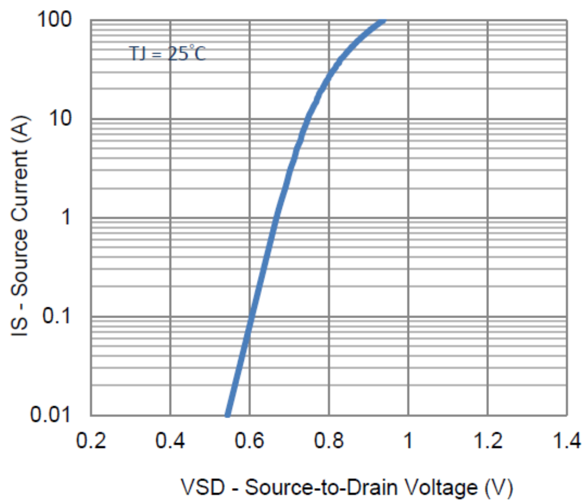
1. On-Resistance vs. Drain Current



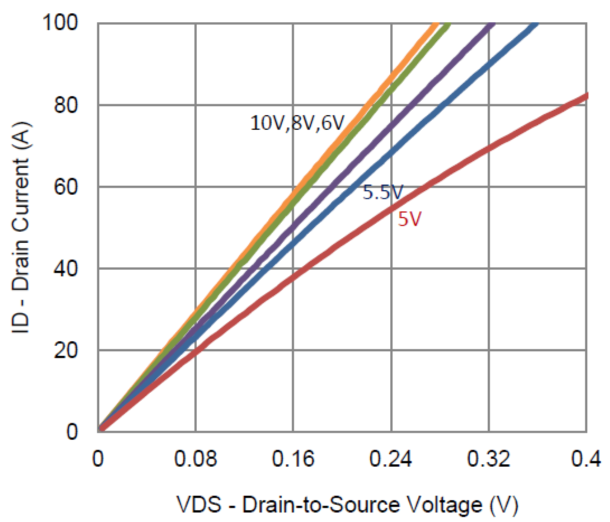
2. Transfer Characteristics



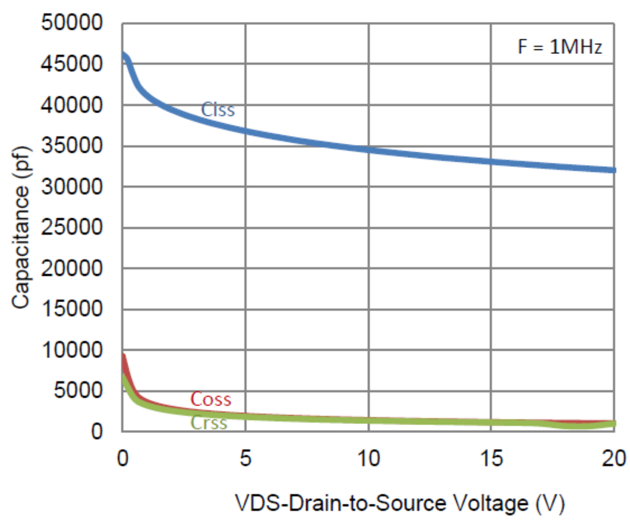
3. On-Resistance vs. Gate-to-Source Voltage



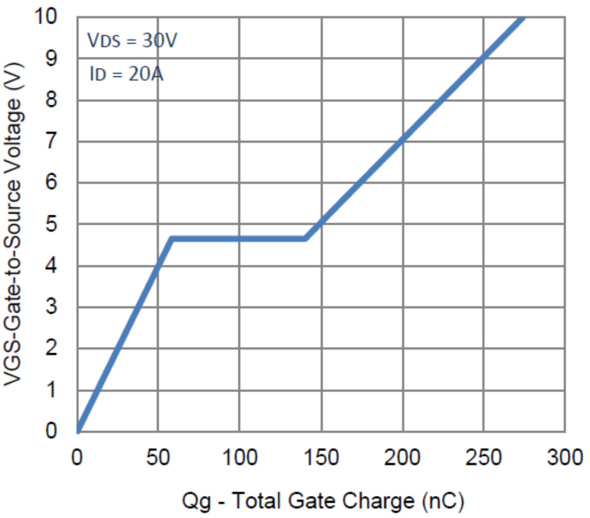
4. Drain-to-Source Forward Voltage



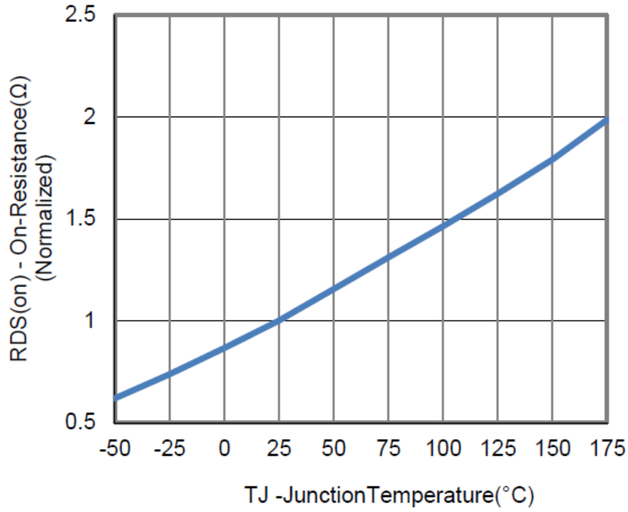
5. Output Characteristics



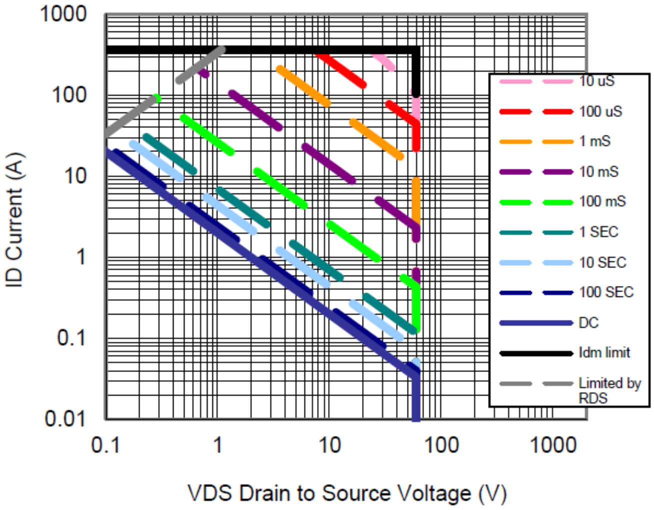
6. Capacitance



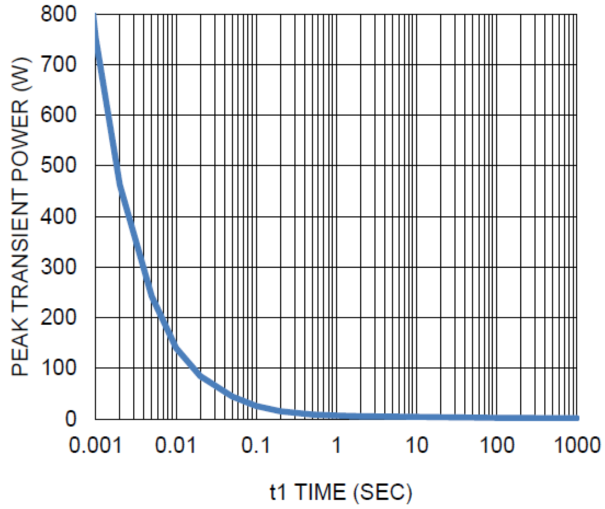
7. Gate Charge



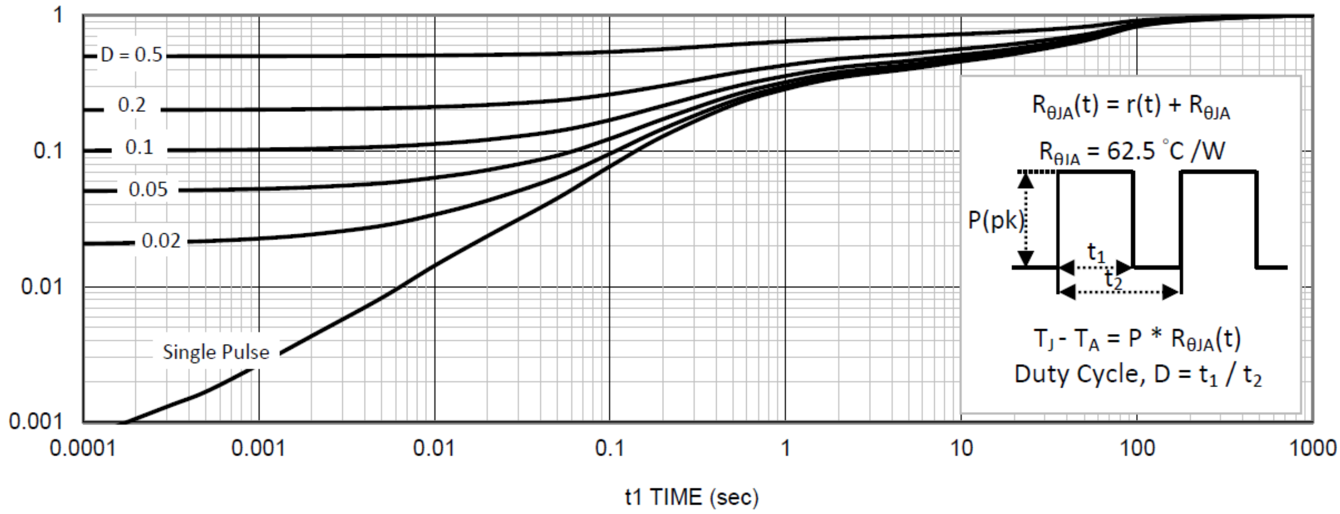
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



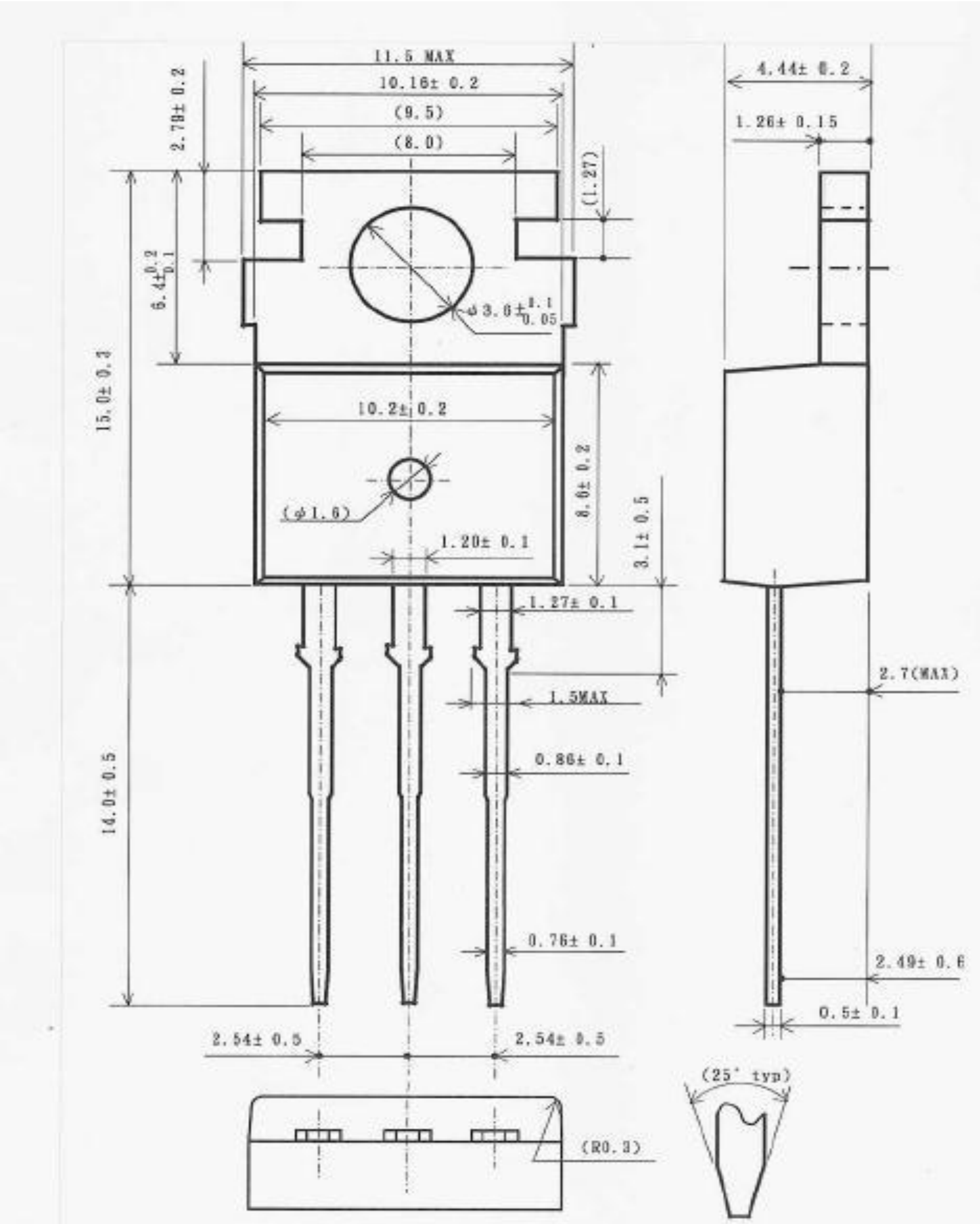
10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient

Packing Information

TO-220



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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