



ACE18010M04N

N-Channel 100-V MOSFET

Description

The ACE18010M04N 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)	$r_{DS(on)}$ (m Ω)	I_D (A)
100	6.5 @ $V_{GS} = 10V$	180A
	8.5 @ $V_{GS} = 5.5V$	

Applications

- LED Inverter Circuits
- DC/DC Conversion Circuits
- Motor drives

Absolute Maximum Ratings

Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ^a	$T_A = 25^\circ C$	I_D	180	A
Pulsed Drain Current ^b		I_{DM}	700	A
Continuous Source Current (Diode Conduction) ^a	$T_A = 25^\circ C$	I_S	180	A
Power Dissipation ^a	$T_A = 25^\circ C$	P_D	300	W
Single Pulse Avalanche Energy ^d		E_{AS}	500	mJ
Operating temperature / storage temperature		T_J/T_{STG}	-55~175	$^\circ C$

THERMAL RESISTANCE RATINGS				
Parameter		Symbol	Maximum	Units
Maximum Junction-to-Ambient ^c	$t \leq 10$ sec	$R_{\theta JA}$	62.5	$^\circ C/W$
	Steady State		0	

Notes

- Package Limited
- Pulse width limited by maximum junction temperature
- Surface Mounted on 1" x 1" FR4 Board.
- $T_J = 25^\circ C$, $L = 0.51mH$, $I_D = 45A$, $V_{DD} = 50V$

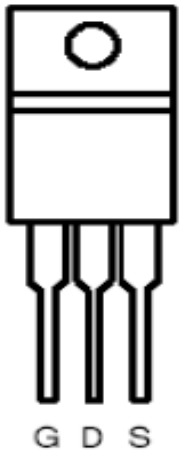


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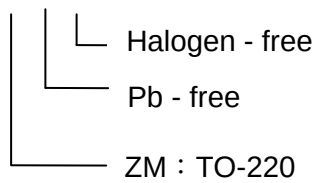
Packaging Type

TO-220



Ordering information

ACE18010M04N XX + H





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Electrical Characteristics

T_A=25°C, 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} = 80 V, V _{GS} = 0 V			1	uA
		V _{DS} = 80 V, V _{GS} = 0 V, T _J = 55°C			10	
On-State Drain Current	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	220			A
Drain-Source On-Resistance	r _{DS(on)}	V _{GS} = 10 V, I _D = 20 A			6.5	mΩ
		V _{GS} = 5.5V, I _D = 16A			8.5	
Forward Transconductance	g _{fs}	V _{DS} = 15 V, I _D = 20 A		18		S
Diode Forward Voltage	V _{SD}	I _S = 90A, V _{GS} = 0 V		1		V
Dynamic						
Total Gate Charge	Q _g	V _{DS} = 50V, V _{GS} = 5.5 V, I _D = 20 A		78		nC
Gate-Source Charge	Q _{gs}			42		
Gate-Drain Charge	Q _{gd}			27		
Turn-On Delay Time	t _{d(on)}	V _{DS} = 50V, R _L = 2.5Ω, I _D = 20 A, V _{GEN} = 10 V, R _{GEN} = 6 Ω		49		ns
Rise Time	t _r			37		
Turn-Off Delay Time	t _{d(off)}			117		
Fall Time	t _f			51		
Input Capacitance	C _{iss}	V _{DS} = 15 V, V _{GS} = 0 V, f = 1 MHz		8681		pF
Output Capacitance	C _{oss}			730		
Reverse Transfer Capacitance	C _{rss}			331		

Note :

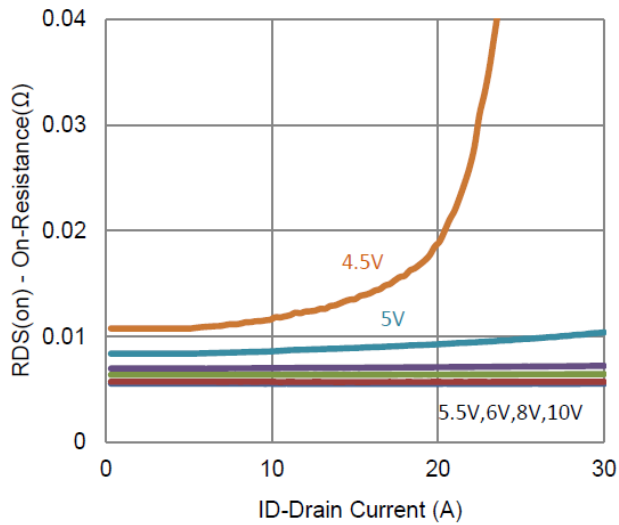
- Pulse test: PW ≤ 300us duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing



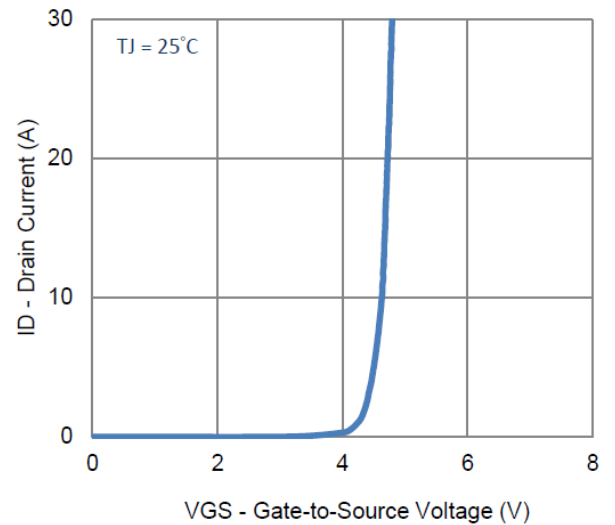
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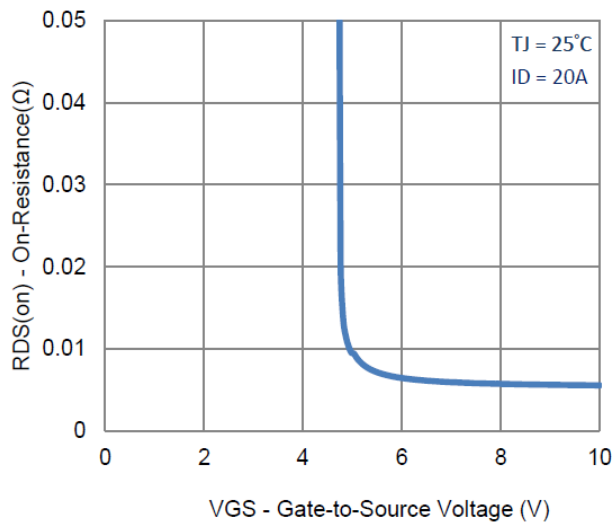
Typical Performance Characteristics



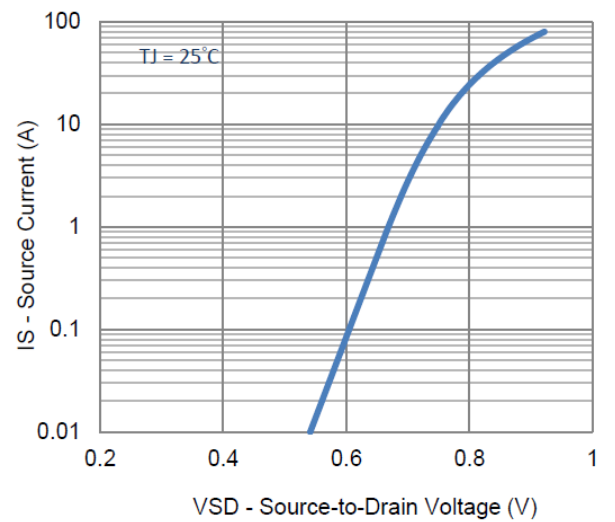
1. On-Resistance vs. Drain Current



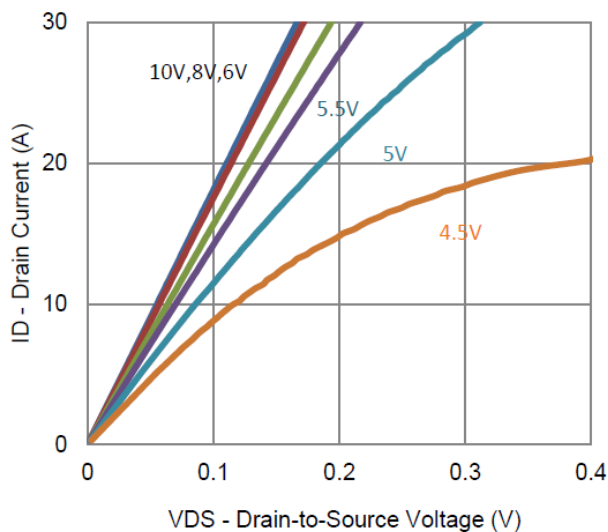
2. Transfer Characteristics



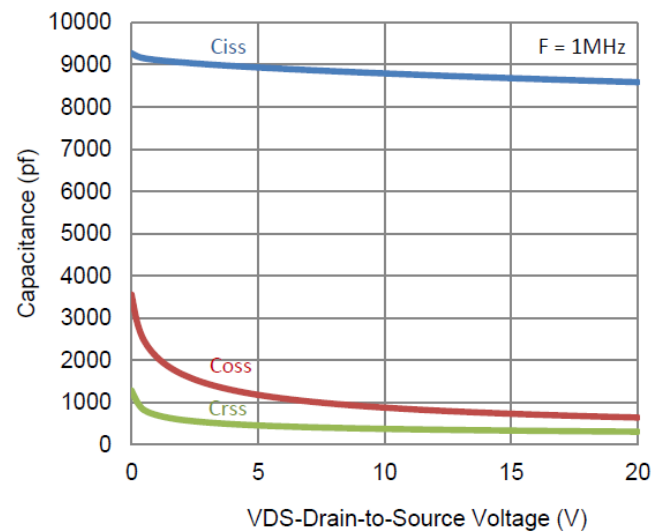
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage



5. Output Characteristics

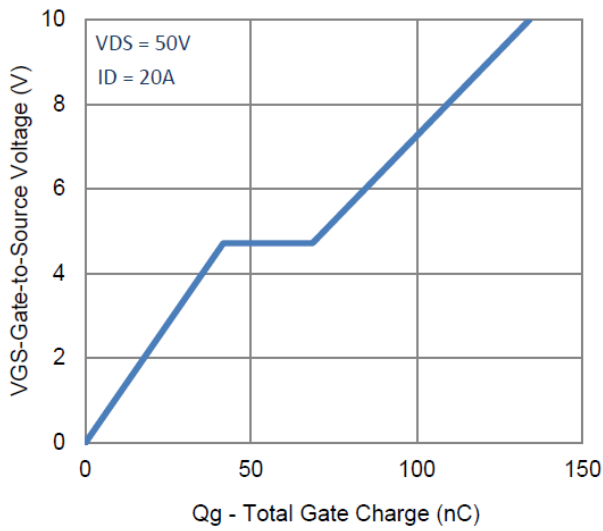


6. Capacitance

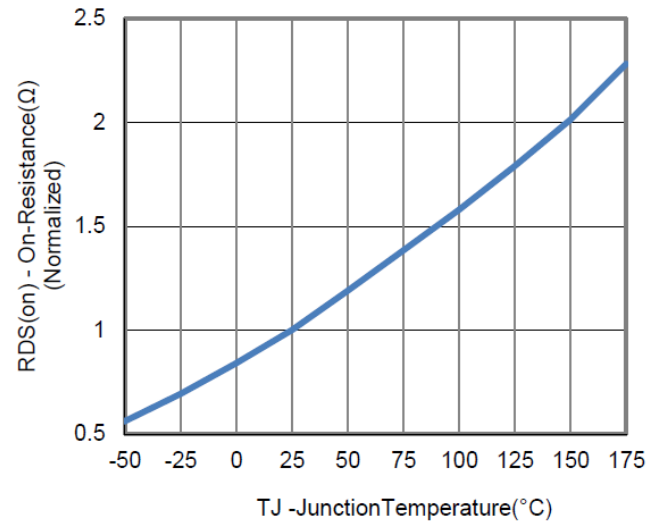


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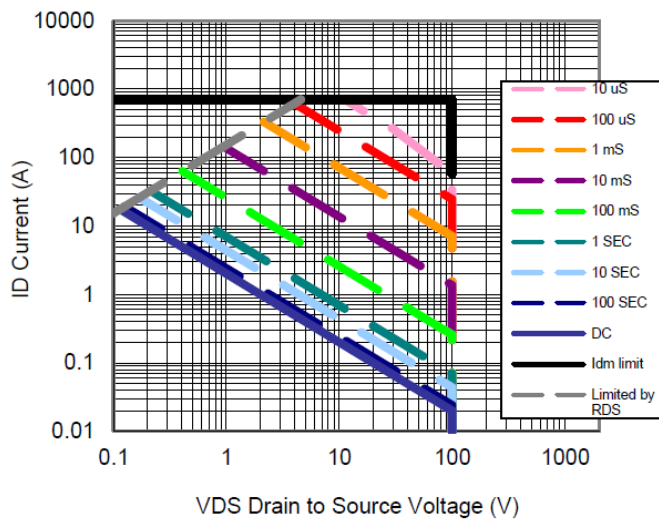
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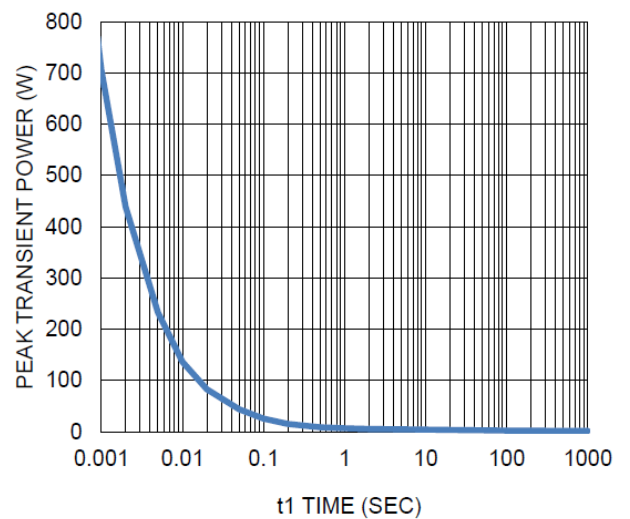
7. Gate Charge



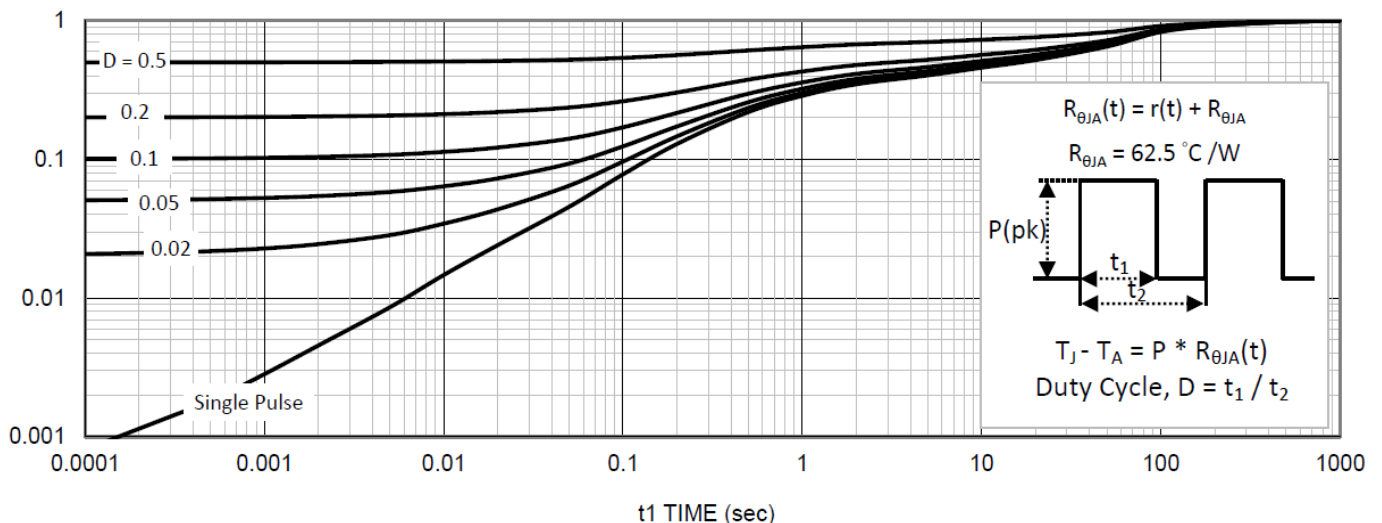
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient

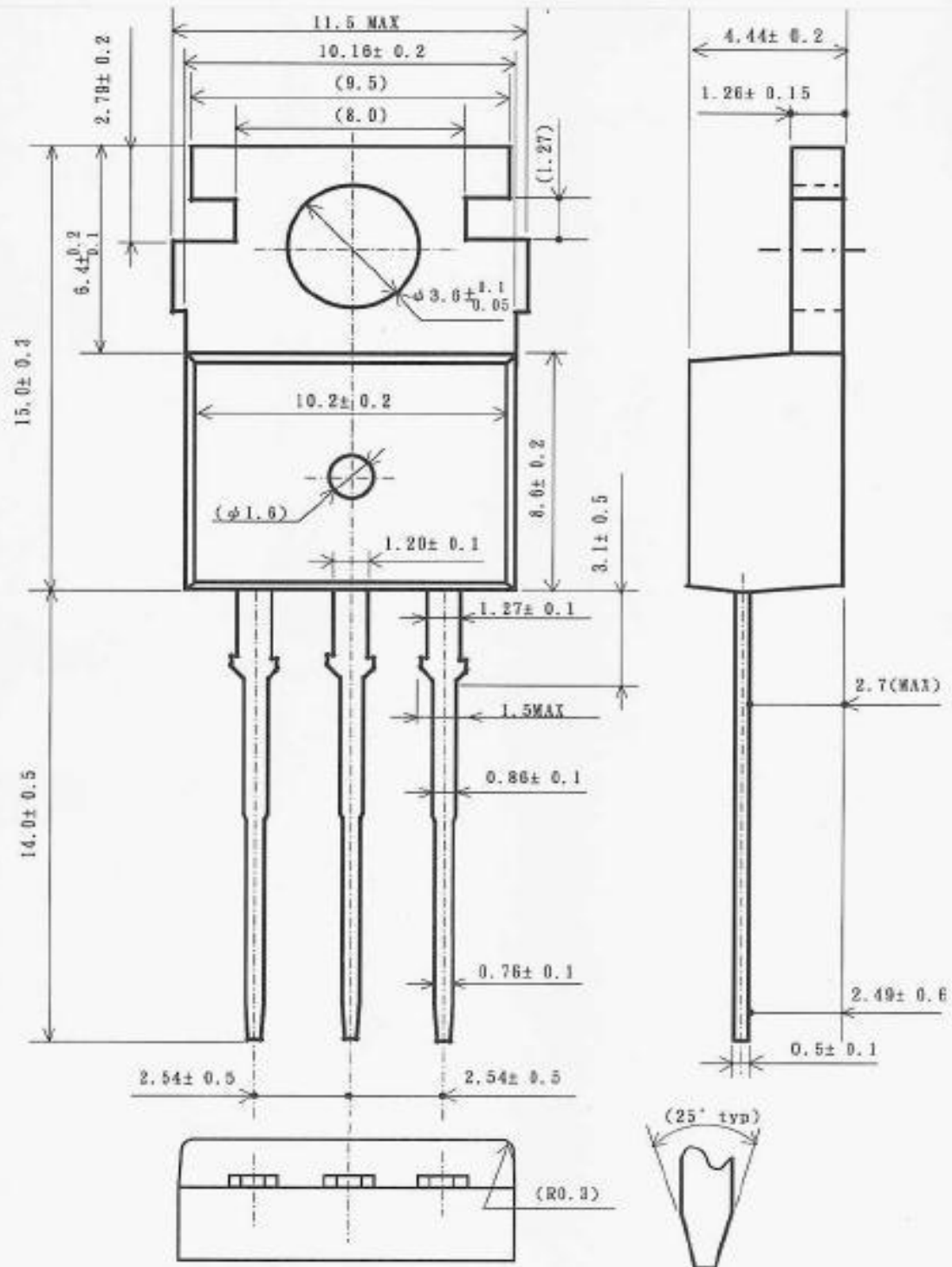


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Packing Information

TO-220





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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 used 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 whose 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.