



ACE19020M

N-Channel 200-V (D-S) MOSFET

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)
200	240 @ $V_{GS} = 10V$	29

Applications

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

Absolute Maximum Ratings

Parameter	Symbol	Limit	Units
Drain-Source Voltage	V_{DS}	200	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	29	A
Pulse Drain Current ^a	I_{DM}	100	
Continuous Drain Current (Diode Continuous)	I_S	29	A
Power Dissipation ^a	P_D	300	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^{\circ}C$

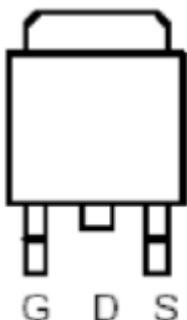
Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$R_{\theta JA}$	62.5	$^{\circ}C/W$
Maximum Junction-to-Case	$R_{\theta JC}$	0.5	$^{\circ}C/W$

Notes

a. Pulse width limited by maximum junction temperature

Packaging Type

TO-263-3



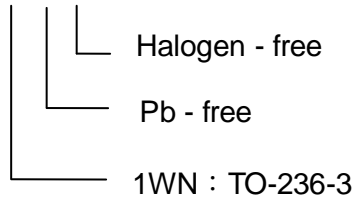


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Ordering information

ACE19020M XX + H



Electrical Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Gate Source Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1			V
Gate Body Leakage	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=160V, V_{GS}=0V$			1	uA
		$V_{DS}=160V, V_{GS}=0V, T_J=55^\circ C$			25	
On-State Drain-Current ^a	$I_{D(on)}$	$V_{DS}=5V, V_{GS}=10V$	40			A
Static Drain-Source On-Resistance ^a	$r_{DS(ON)}$	$V_{GS}=10V, I_D=10A$			240	m Ω
Forward Transconductance ^a	g_{fs}	$V_{DS}=15V, I_D=10A$		32		S
Diode Forward Voltage ^a	V_{SD}	$I_S=15A, V_{GS}=0V$		0.86		V
Dynamic ^b						
Total Gate Charge	Q_g	$V_{DS}=100V, V_{GS}=5.5V, I_D=5A$		13		nC
Gate-Source Charge	Q_{gs}			6.2		
Gate-Drain Charge	Q_{gd}			6.6		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=100V, R_L=20\Omega, I_D=5A, V_{GEN}=10V, R_{GEN}=6\Omega,$		14		ns
Rise Time	t_f			10		
Turn-Off Delay Time	$t_{d(off)}$			26		
Fall Time	t_f			10		
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		1482		pF
Output Capacitance	C_{oss}			110		
Reverse Transfer Capacitance	C_{rss}			88		

Note:

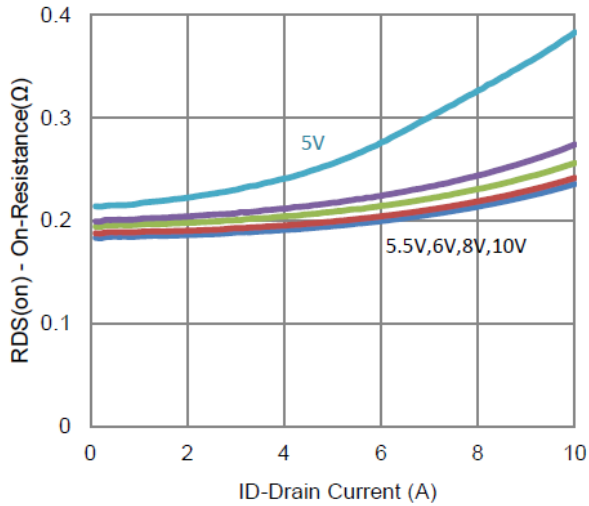
- a. Pulse test: PW \leq 300us duty cycle \leq 2%.
- b. Guaranteed by design, not subject to production testing.



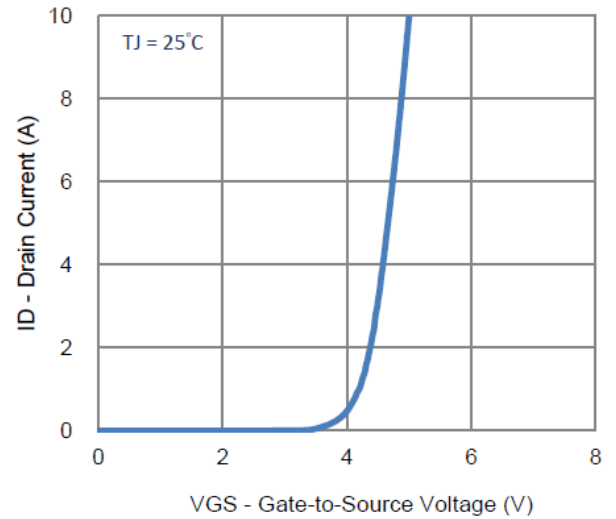
ACE19020M

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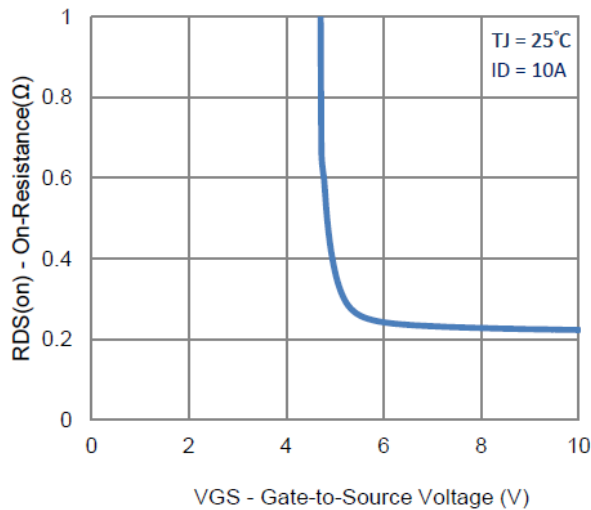
Typical Electrical Characteristics



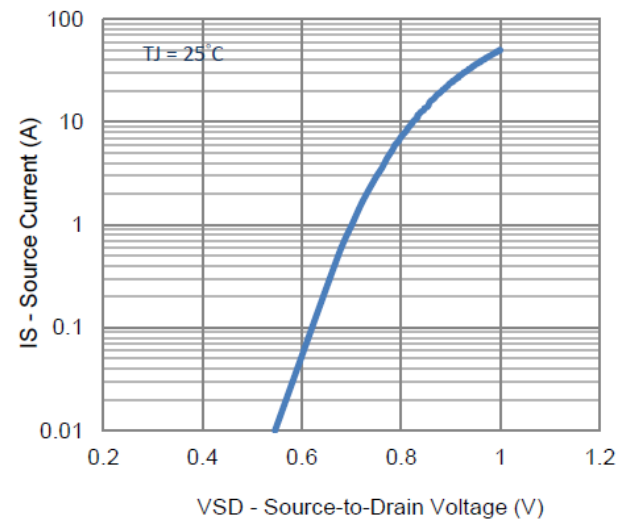
1. On-Resistance vs. Drain Current



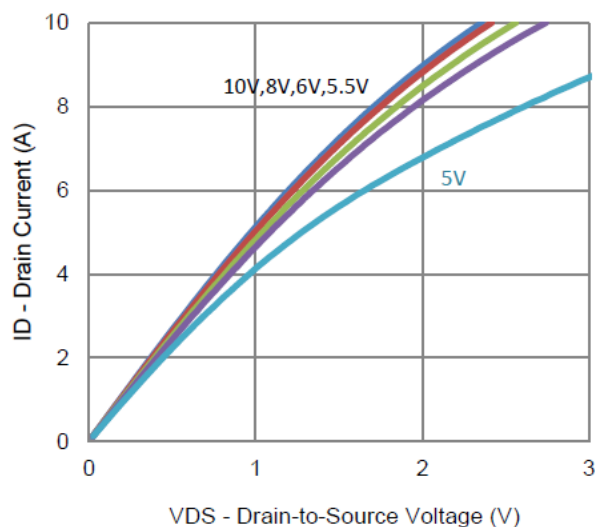
2. Transfer Characteristics



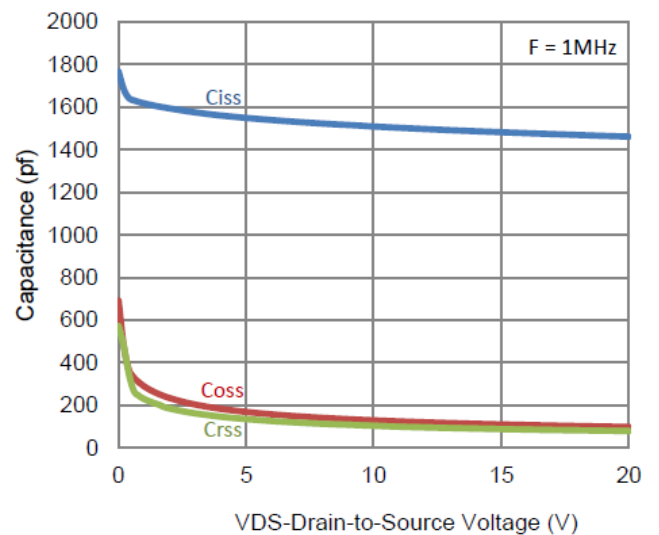
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage



5. Output Characteristics

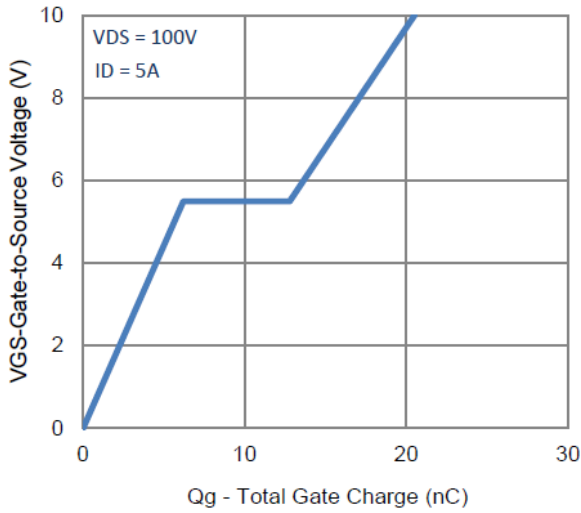


6. Capacitance

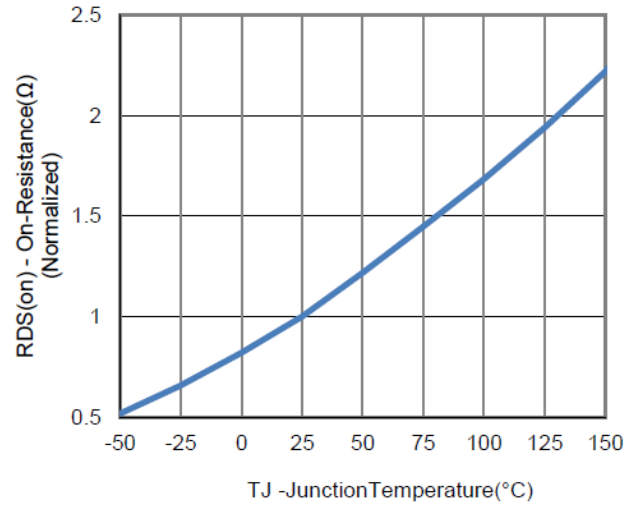


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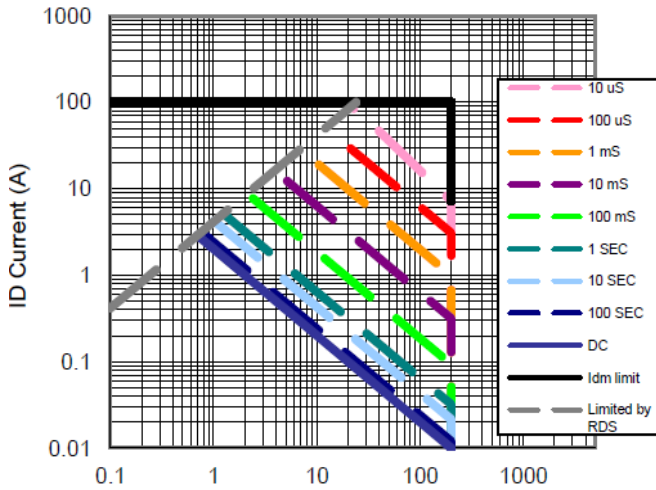
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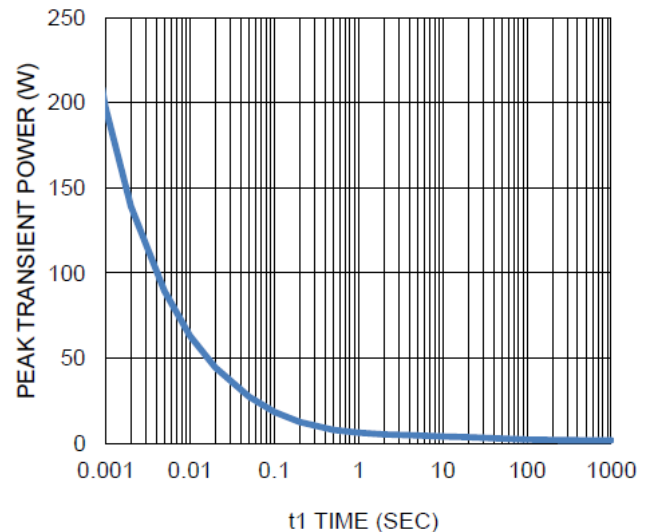
7. Gate Charge



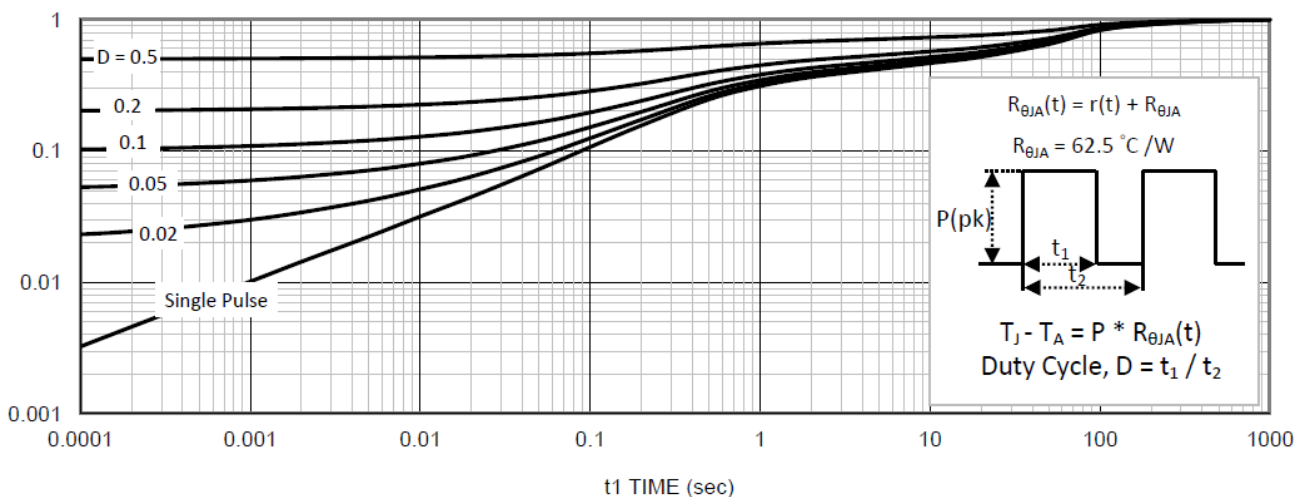
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient

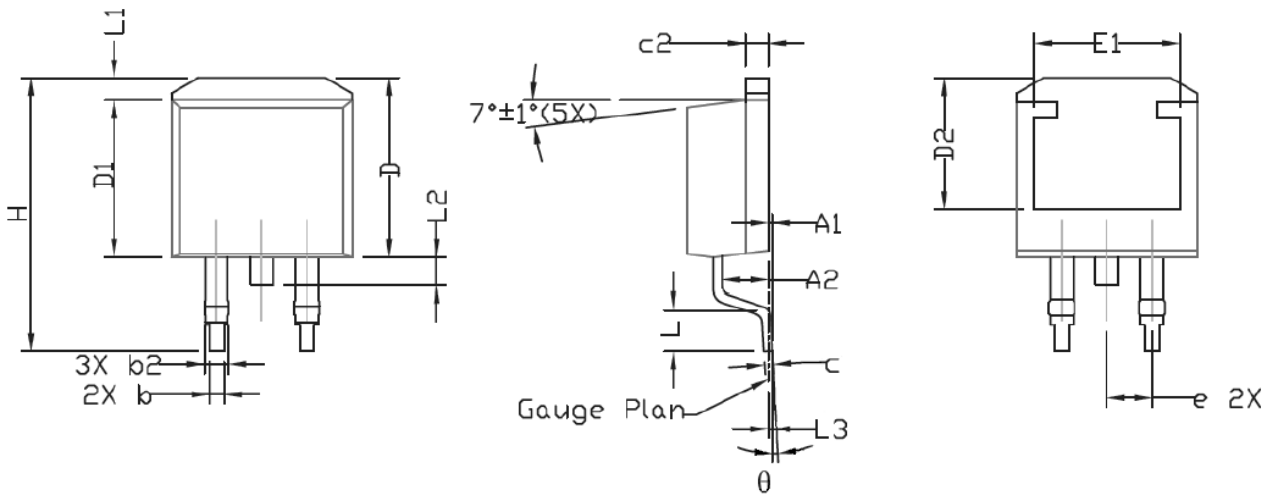


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Packing Information

TO-263-3



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.30	4.57	4.72	0.169	0.180	0.186
A1	0		0.25	0		0.010
A2	2.47	2.57	2.67	0.097	0.101	0.105
b	0.69	0.813	0.94	0.027	0.032	0.037
b2	1.17	1.27	1.45	0.046	0.050	0.057
c	0.48	0.50	0.60	0.019	0.020	0.024
c2	1.17	1.27	1.37	0.046	0.050	0.054
D	9.80	10.05	10.30	0.386	0.396	0.406
D1	8.64	8.78	9.65	0.340	0.346	0.380
D2	7.12	7.37	7.62	0.280	0.290	0.300
E	9.70	10.15	10.54	0.382	0.400	0.415
E1	8.00	8.20	8.40	0.315	0.323	0.331
e	2.54 BSC			0.100 BSC		
H	14.99	15.24	15.49	0.590	0.600	0.610
L	1.78	2.29	2.79	0.070	0.090	0.110
L1	1.02	1.27	1.52	0.040	0.050	0.060
L2			1.75			0.069
L3		0.254			0.010	
θ	0°		8°	0°		8°



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Notes

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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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