ACE2391M
N-Channel 150-V MOSFET

Description

ACE2391M uses advanced trench technology to provide excellent $R_{DS(ON)}$. This device particularly suits for low voltage application such as power management of desktop computer or notebook computer power management, DC/DC converter.

Features

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

Applications:

- PoE Power Sourcing Equipment
- PoE Powered Devices
- Telecom DC/DC converters
- White LED boost converters

Absolute Maximum Ratings

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current[a]	T_A=25℃	I_D	1.1	A
	T_A=70℃		0.9	
Pulsed Drain Current [b]		I_{DM}	5	
Continuous Source Current (Diode Conduction) [a]		I_S	1.6	A
Power Dissipation[a]	T_A=25℃	P_D	1.3	W
	T_A=70℃		0.8	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Maximum	Unit
Maximum Junction-to-Ambient [a]	t<=10sec	$R_{\theta JA}$	100	°C/W
	Steady State		166	

Notes

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

b. Pulse width limited by maximum junction temperature

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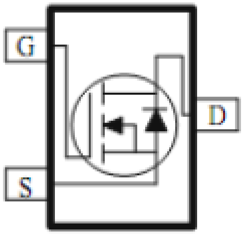
Packaging Type



Ordering information

ACE2391M BM + H

- H: Halogen - free
- + : Pb - free
- BM : SOT-23-3

Electrical Characteristics

Parameter	Symbol	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} = 120 V, V_{GS} = 0 V			1	uA
		V_{DS} = 120V, V_{GS} = 0 V, T_J = 55℃			25	
On-State Drain Current	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 10 V	5			A
Drain-Source On-Resistance	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 1.1 A			0.7	Ω
		V_{GS} = 4.5 V, I_D = 0.8 A			1.2	
Forward Transconductance	g_{fs}	V_{DS} = 15 V, I_D = 1.1 A		5		S
Diode Forward Voltage	V_{SD}	I_S = 0.8 A, V_{GS} = 0 V		0.75		V
Dynamic						
Total Gate Charge	Q_g	V_{DS} = 75 V, V_{GS} = 4.5 V, I_D = 1.1 A		3.5		nC
Gate-Source Charge	Q_{gs}			1.3		
Gate-Drain Charge	Q_{gd}			1.5		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 75 V, R_L = 75 Ω , I_D = 1.1 A, V_{GEN} = 10 V, R_{GEN} = 6 Ω		4.4		nS
Rise Time	t_r			4.9		
Turn-Off Delay Time	$t_{d(off)}$			18.4		
Fall Time	t_f			4.9		
Input Capacitance	C_{iss}	V_{DS} = 15 V, V_{GS} = 0 V, f =1 MHz		356		pF
Output Capacitance	C_{oss}			38		
Reverse Transfer Capacitance	C_{rss}			17		

Note:

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

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

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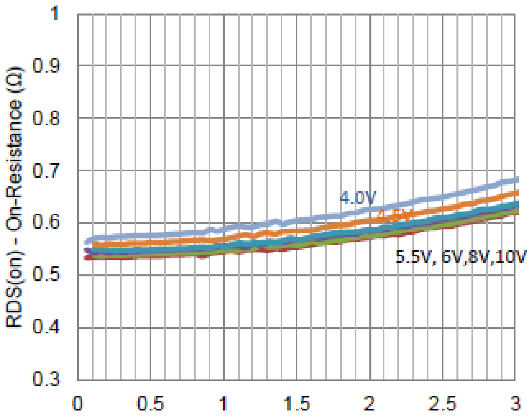
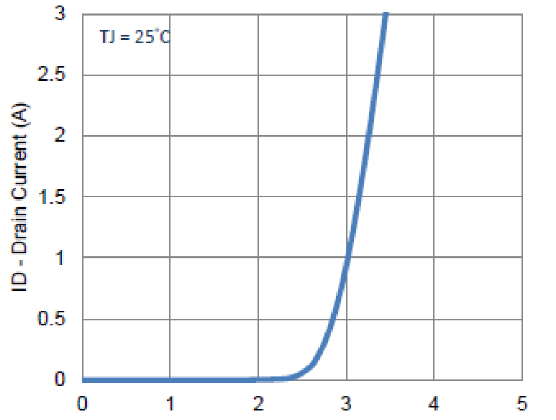
Typical Performance Characteristics (N-Channel)



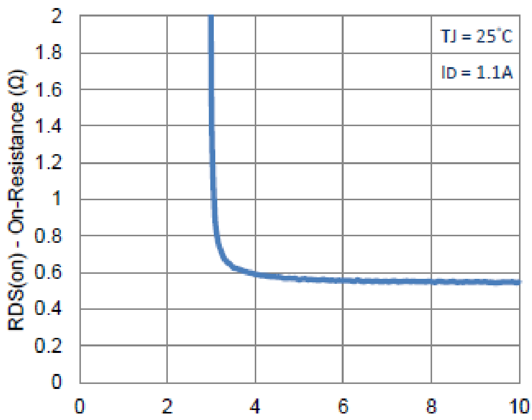
ID-Drain Current (A)

1. On-Resistance vs. Drain Current



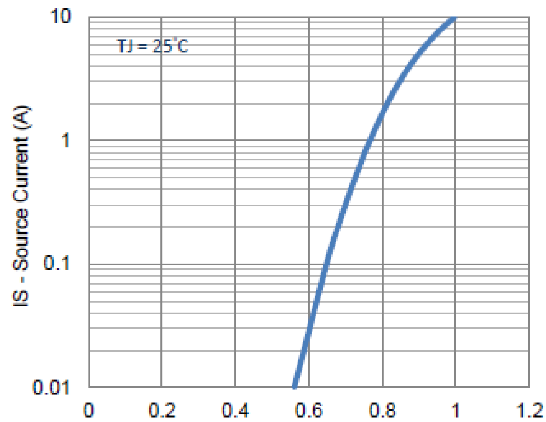
VGS - Gate-to-Source Voltage (V)

2. Transfer Characteristics



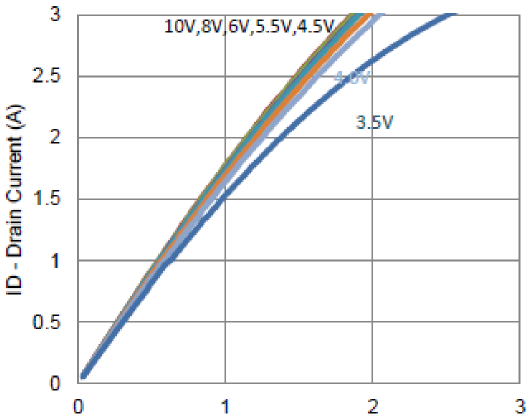
VGS - Gate-to-Source Voltage (V)

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



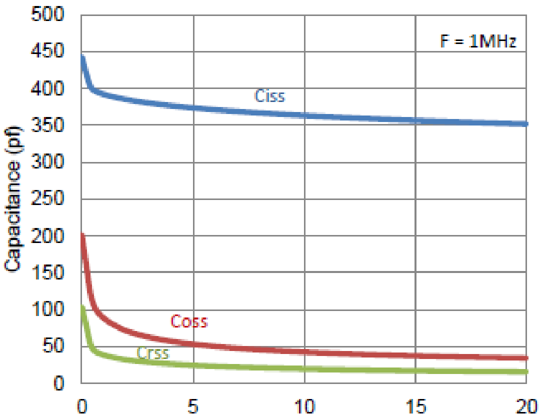
VSD - Source-to-Drain Voltage (V)

4. Drain-to-Source Forward Voltage



VDS - Drain-to-Source Voltage (V)

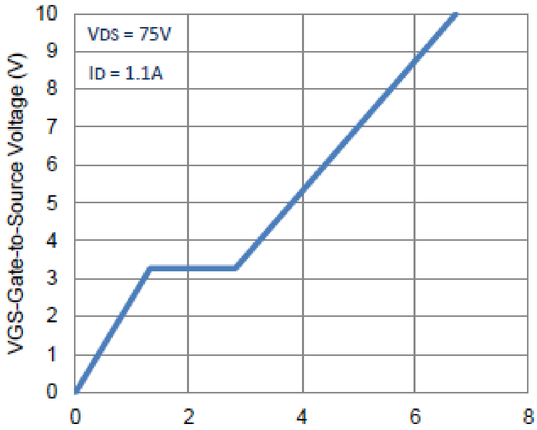
5. Output Characteristics



VDS-Drain-to-Source Voltage (V)

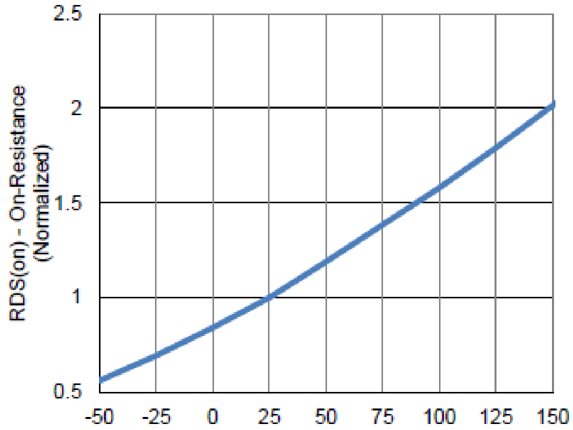
6. Capacitance

Typical Performance Characteristics



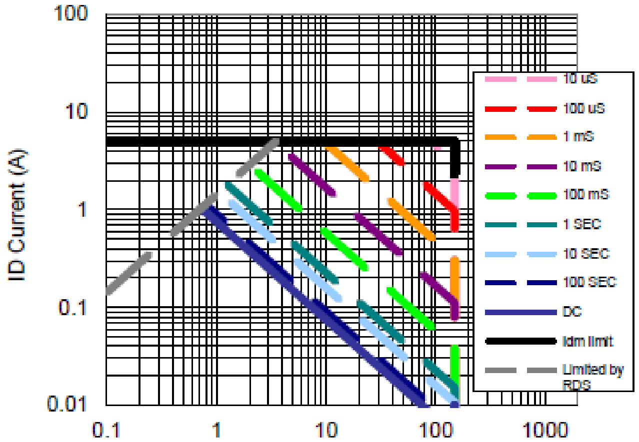
Qg - Total Gate Charge (nC)

7. Gate Charge



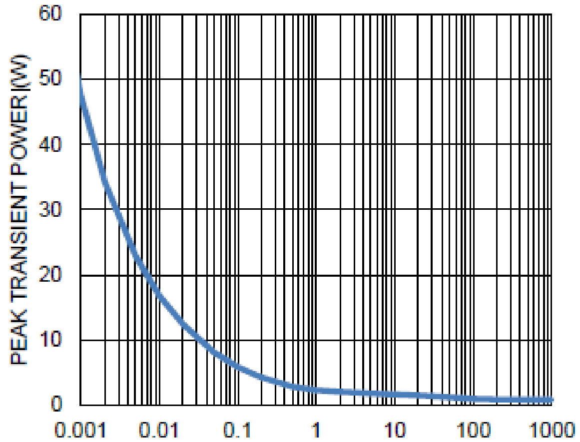
TJ –Junction Temperature(°C)

8. Normalized On-Resistance Vs Junction Temperature



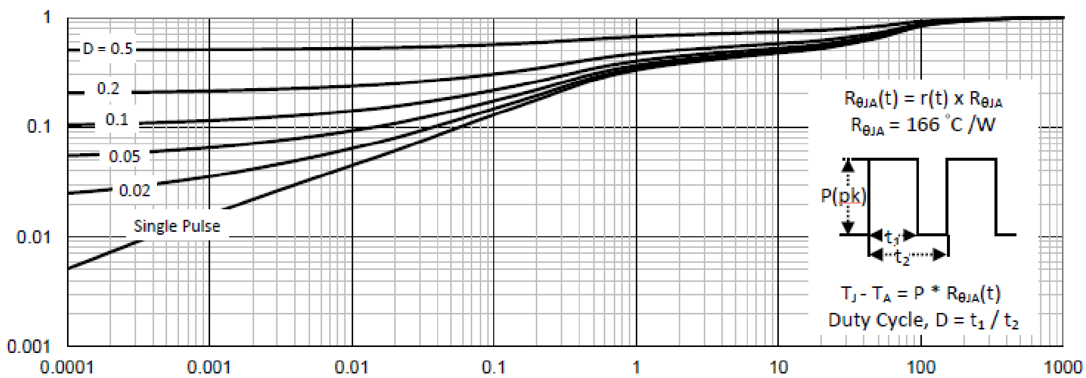
VDS Drain to Source Voltage (V)

9. Safe Operating Area



t1 TIME (SEC)

10. Single Pulse Maximum Power Dissipation

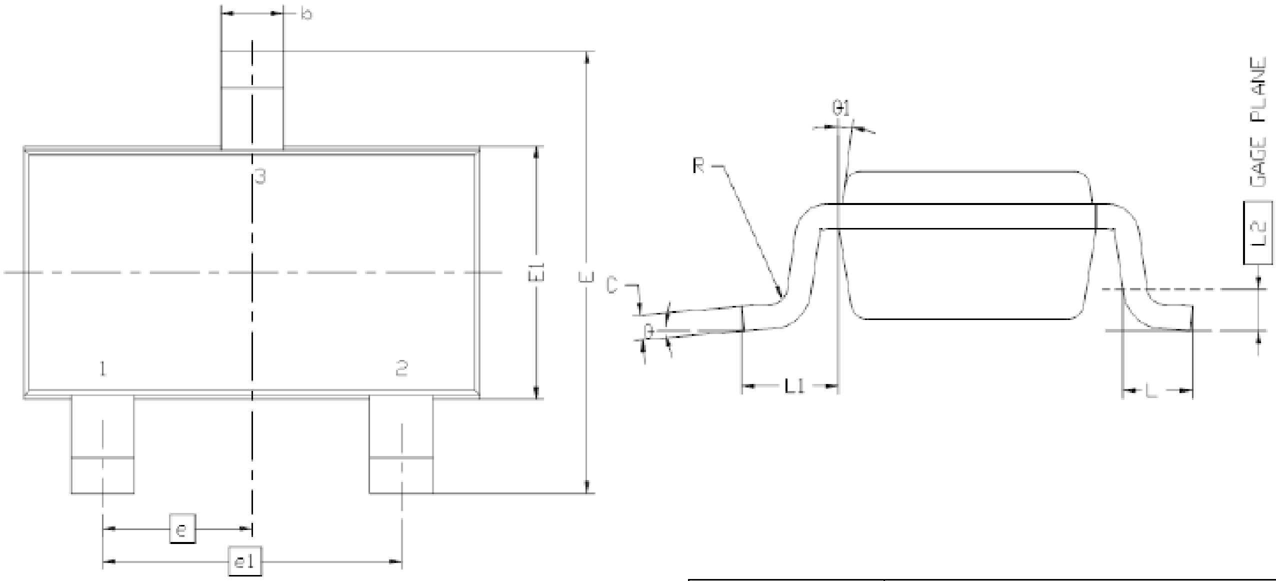


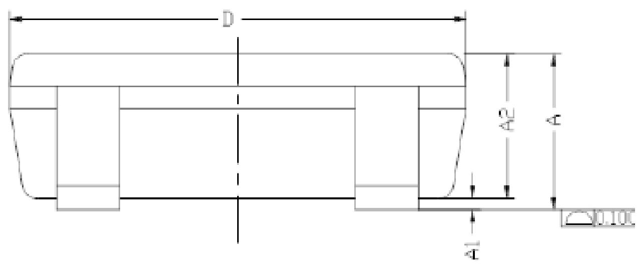
t1 TIME (sec)

11. Normalized Thermal Transient Junction to Ambient

Packing Information

STO-23-3





SYMBOLS	MILLIMETERS		
	MIN	NOM	MAX
A	0.935	0.95	1.10
A1	0.01		0.10
A2	0.85	0.90	0.925
b	0.30	0.40	0.50
C	0.10	0.15	0.25
D	2.70	2.90	3.10
E	2.60	2.80	3.00
E1	1.40	1.60	1.80
e	0.95 BSC		
e1	1.90 BSC		
L	0.30	0.40	0.60
L1	0.60REF		
L2	0.25BSC		
R	0.10		
Θ	0°	4°	8°
Θ1	7°NOM		

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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