



# ACE2370M

## N-Channel 100-V MOSFET

### Description

ACE2370M 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	$V_{DS}$	100	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$		
Continuous Drain Current <sup>a</sup>	$I_D$	$T_A=25^\circ\text{C}$	1.5	A
		$T_A=70^\circ\text{C}$	1.2	
Pulsed Drain Current <sup>b</sup>	$I_{DM}$	10		
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	1.6	A	
Power Dissipation <sup>a</sup>	$P_D$	$T_A=25^\circ\text{C}$	1.3	W
		$T_A=70^\circ\text{C}$	0.8	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$	

### THERMAL RESISTANCE RATINGS

Parameter	Symbol	Maximum	Unit	
Maximum Junction-to-Ambient <sup>a</sup>	$R_{\theta JA}$	$t \leq 10\text{sec}$	100	$^\circ\text{C/W}$
		Steady State	166	

#### Notes

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

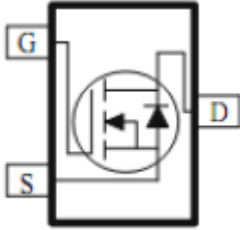
b. Pulse width limited by maximum junction temperature



# ACE2370M

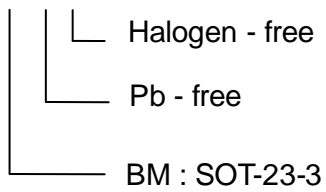
## N-Channel 100-V MOSFET

### Packaging Type



### Ordering information

ACE2370M BM + H





# ACE2370M

## N-Channel 100-V MOSFET

### Electrical Characteristics

$T_A=25^{\circ}\text{C}$ , unless otherwise specified.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Static</b>						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	1			V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 \text{ V}, V_{GS} = 20 \text{ V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 80 \text{ V}, V_{GS} = 0 \text{ V}$			1	uA
		$V_{DS} = 80 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^{\circ}\text{C}$			10	
On-State Drain Current	$I_{D(on)}$	$V_{DS} = 5 \text{ V}, V_{GS} = 10 \text{ V}$	4			A
Drain-Source On-Resistance	$r_{DS(on)}$	$V_{GS} = 10 \text{ V}, I_D = 1.2 \text{ A}$			280	m $\Omega$
		$V_{GS} = 4.5 \text{ V}, I_D = 1.0 \text{ A}$			355	
Forward Transconductance	$g_{fs}$	$V_{DS} = 15 \text{ V}, I_D = 1.2 \text{ A}$		5		S
Diode Forward Voltage	$V_{SD}$	$I_S = 0.8 \text{ A}, V_{GS} = 0 \text{ V}$		0.75		V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS} = 50 \text{ V}, V_{GS} = 4.5 \text{ V}, I_D = 1.2 \text{ A}$		3.9		nC
Gate-Source Charge	$Q_{gs}$			1.3		
Gate-Drain Charge	$Q_{gd}$			2.0		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 50 \text{ V}, R_L = 41.7 \Omega, I_D = 1.2 \text{ A},$ $V_{GEN} = 10 \text{ V}, R_{GEN} = 6 \Omega$		4.8		nS
Rise Time	$t_r$			3.9		
Turn-Off Delay Time	$t_{d(off)}$			12.7		
Fall Time	$t_f$			3.2		
Input Capacitance	$C_{iss}$	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$		332		pF
Output Capacitance	$C_{oss}$			40		
Reverse Transfer Capacitance	$C_{rss}$			29		
Gate Resistance	$R_g$	$f = 1 \text{ MHz}$		0.3		$\Omega$

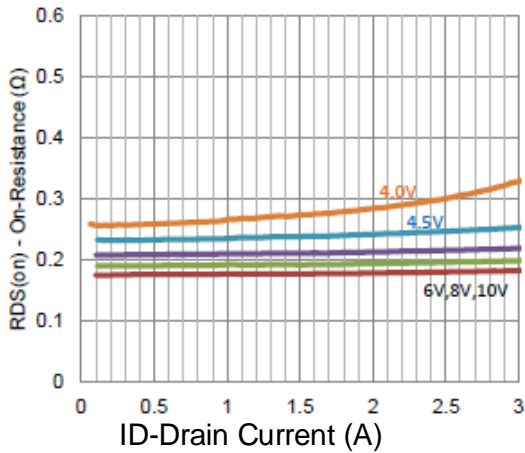
Note:

- Pulse test: PW  $\leq 300\mu\text{s}$  duty cycle  $\leq 2\%$ .
- Guaranteed by design, not subject to production testing.

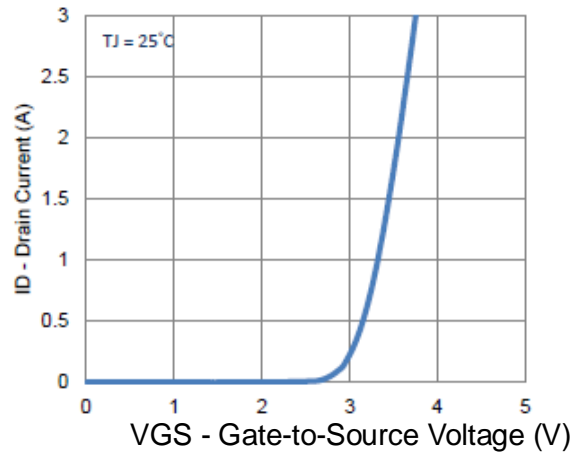


# ACE2370M N-Channel 100-V MOSFET

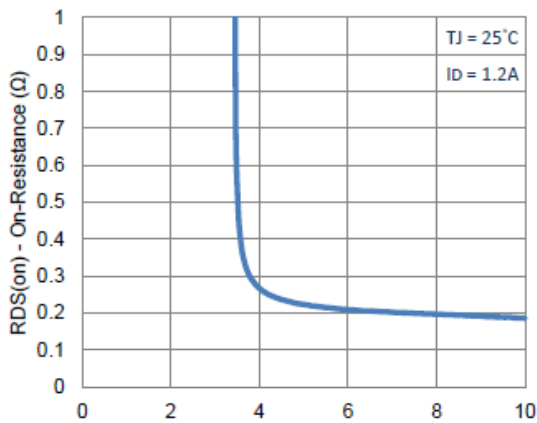
## Typical Performance Characteristics (N-Channel)



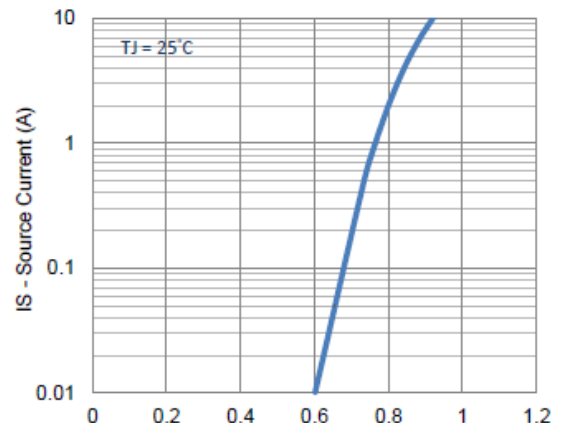
1. On-Resistance vs. Drain Current



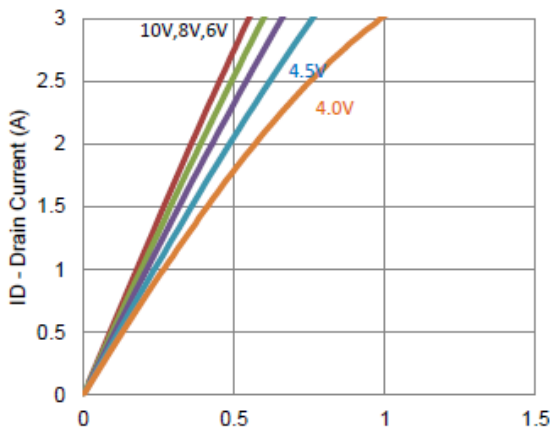
2. Transfer Characteristics



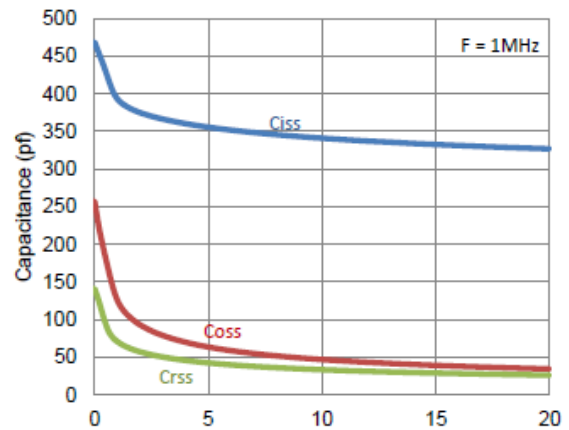
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage



5. Output Characteristics

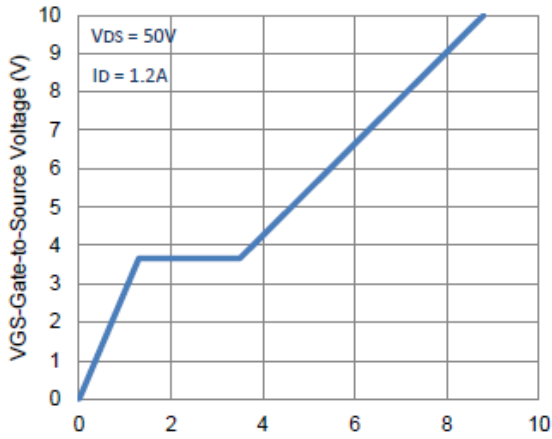


6. Capacitance

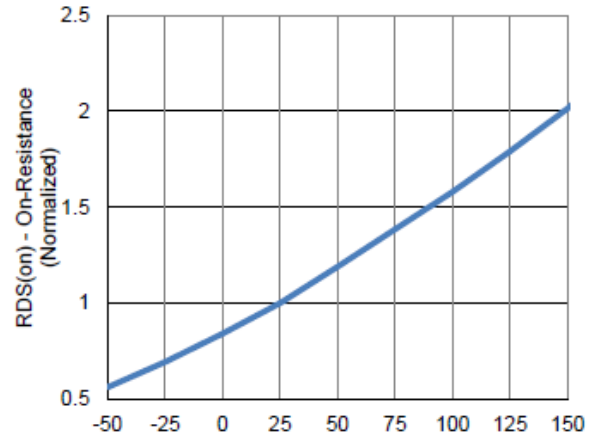


# ACE2370M N-Channel 100-V MOSFET

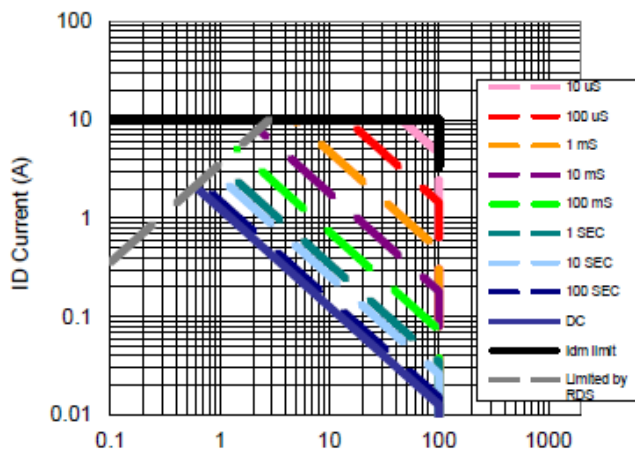
## Typical Performance Characteristics



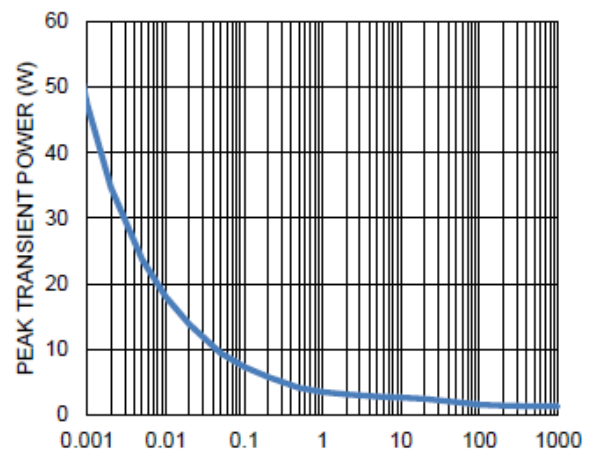
Qg - Total Gate Charge (nC)  
7. Gate Charge



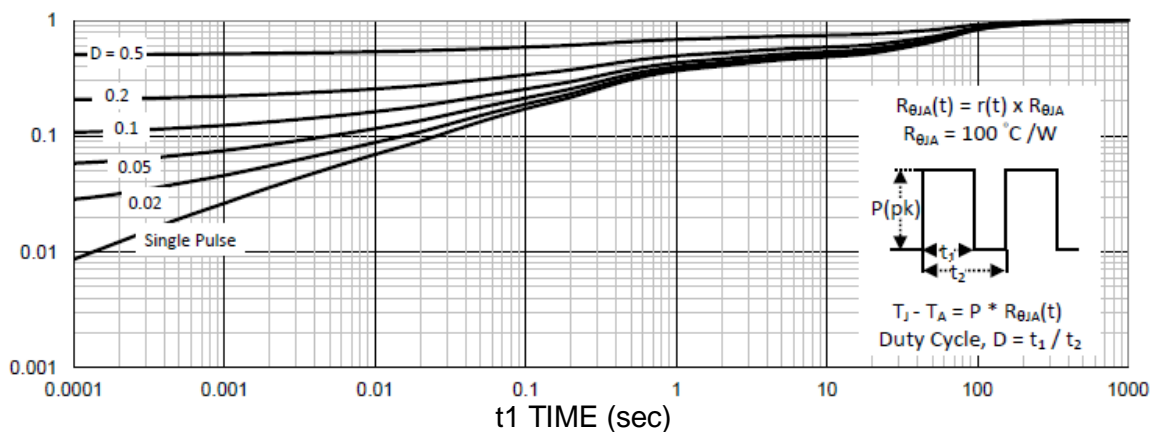
TJ - Junction Temperature(°C)  
8. Normalized On-Resistance Vs  
Junction Temperature



VDS Drain to Source Voltage (V)  
9. Safe Operating Area



t1 TIME (SEC)  
10. Single Pulse Maximum Power Dissipation



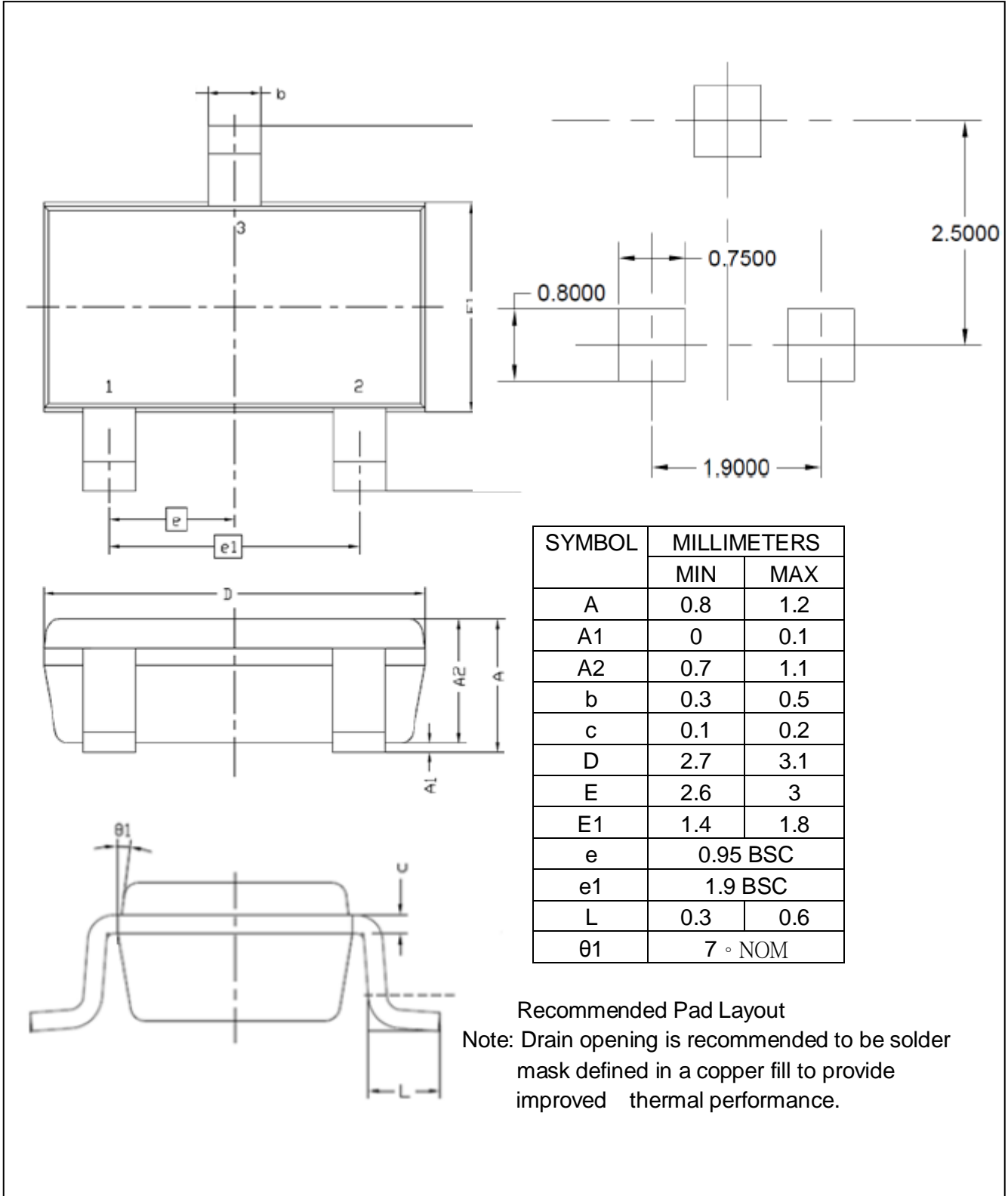
t1 TIME (sec)  
11. Normalized Thermal Transient Junction to Ambient



# ACE2370M N-Channel 100-V MOSFET

## Packing Information

STO-23-3





# ACE2370M

## N-Channel 100-V MOSFET

### 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 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.

ACE Technology Co., LTD.  
<http://www.ace-ele.com/>