## Description

The ACE2341 is the P-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology.

This high density process is especially tailored to minimize on-state resistance.

These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and Battery powered circuits, and low in-line power loss are needed in a very small outline surface mount package.

## Features

- -20V/-3.3A, $R_{DS(ON)}$=45mΩ@$V_{GS}$=-4.5V
- -20V/-2.8A, $R_{DS(ON)}$= 55mΩ@$V_{GS}$=-2.5V
- -20V/-2.3A, $R_{DS(ON)}$= 65mΩ@$V_{GS}$=-1.8V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3L package design

## Application

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

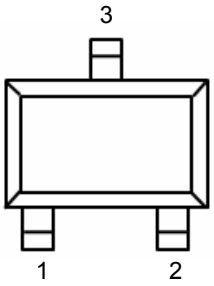
## Absolute Maximum Ratings

(TA=25℃ Unless otherwise noted)

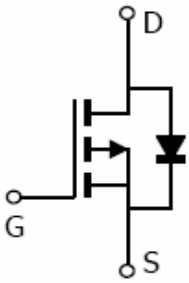
| Parameter | | Symbol | Typical | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DSS}$ | -20 | V |
| Gate-Source Voltage | | $V_{GSS}$ | ±12 | V |
| Continuous Drain Current ($T_J$=150℃) | $T_A$=25℃ | $I_D$ | -4.0 | A |
| | $T_A$=70℃ | | -2.8 | |
| Pulsed Drain Current | | $I_{DM}$ | -12 | A |
| Continuous Source Current (Diode Conduction) | | $I_S$ | -1.0 | A |
| Power Dissipation | $T_A$=25℃ | $P_D$ | 1.25 | W |
| | $T_A$=70℃ | | 0.8 | |
| Operating Junction Temperature | | $T_J$ | -55/150 | ℃ |
| Storage Temperature Range | | $T_{STG}$ | -55/150 | ℃ |
| Thermal Resistance-Junction to Ambient | | $R_{\theta JA}$ | 140 | ℃/W |

## Packaging Type

SOT-23-3




| Pin | Description |
|---|---|
| 1 | Gate |
| 2 | Source |
| 3 | Drain |




## Ordering information

Selection Guide

ACE2341 XX + H

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

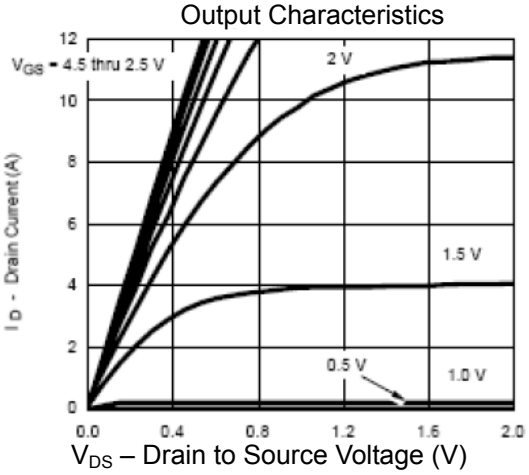
## Electrical Characteristics

(TA=25℃, Unless otherwise noted)

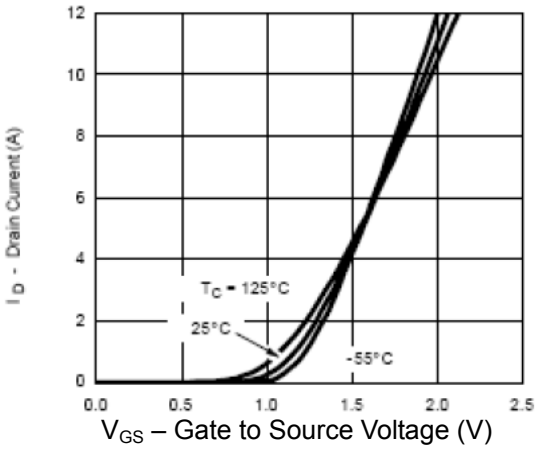
| Parameter | Symbol | Conditions | Min. | Typ | Max. | Unit |
|---|---|---|---|---|---|---|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$=0V, $I_D$=-250uA | -20 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=-250uA | -0.35 | | -0.9 | V |
| Gate Leakage Current | $I_{GSS}$ | $V_{DS}$=0.V, $V_{GS}$=±12V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=-20V, $V_{GS}$=0V | | | -1 | uA |
| | | $V_{DS}$=-20V, $V_{GS}$=0V $T_J$=55℃ | | | -10 | uA |
| On-State Drain Current | $I_{D(ON)}$ | $V_{DS}$≦-5V, $V_{GS}$=-4.5V | -6 | | | A |
| Drain-Source On-Resistance | $R_{DS(ON)}$ | $V_{GS}$=-4.5V, $I_D$=-3.3A | | 0.036 | 0.045 | Ω |
| | | $V_{GS}$=-2.5V, $I_D$=-2.8A | | 0.045 | 0.055 | Ω |
| | | $V_{GS}$=-1.8V, $I_D$=-2.3A | | 0.055 | 0.065 | Ω |
| Forward Transconductance | Gfs | $V_{DS}$=-5.0V, $I_D$=-3.3A | | 3 | | S |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=-1.6A, $V_{GS}$=0V | | -0.8 | -1.2 | V |
| Dynamic | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=-6V, $V_{GS}$=-4.5V, $I_D$≡-3.3A | | 8 | 13 | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 1.2 | | nC |
| Gate-Drain Charge | $Q_{gd}$ | | | 2.2 | | nC |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=-6V, $V_{GS}$=0V, f=1MHz | | 700 | | pF |
| Output Capacitance | $C_{oss}$ | | | 160 | | pF |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 120 | | pF |
| Turn-On Time | $t_{d(on)}$ | $V_{DD}$=-6V, $R_L$=6Ω $I_D$≡-1.0A, $V_{GEN}$=-4.5V $R_G$=6Ω | | 15 | 25 | ns |
| | $t_r$ | | | 35 | 55 | ns |
| Turn-Off Time | $t_{d(off)}$ | | | 60 | 90 | ns |
| | $t_f$ | | | 40 | 60 | ns |

## Typical Characteristics

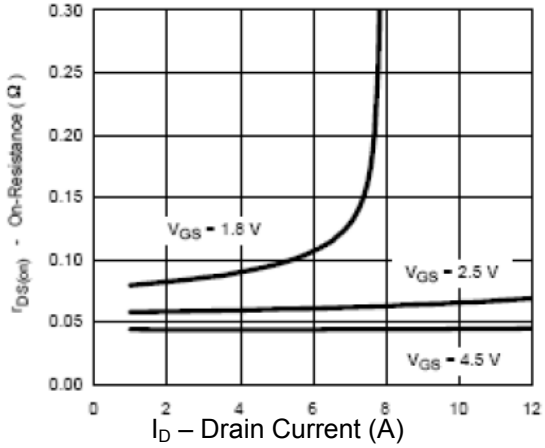
Output Characteristics



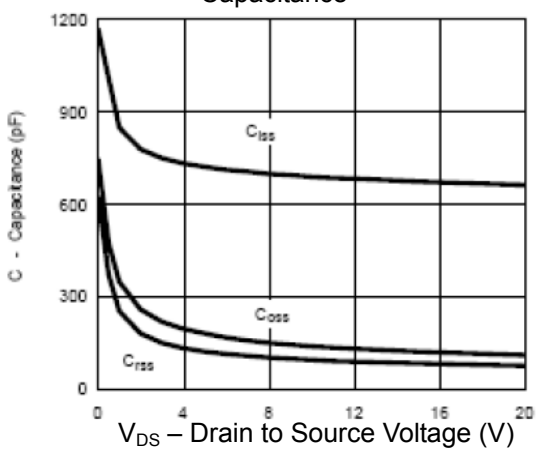

Transfer Characteristics




On-Resistance vs. Drain Current

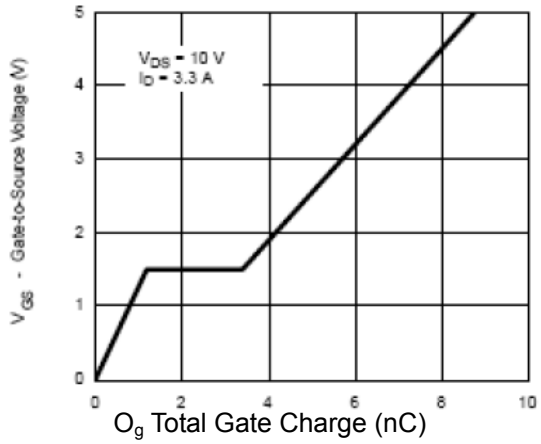



Capacitance

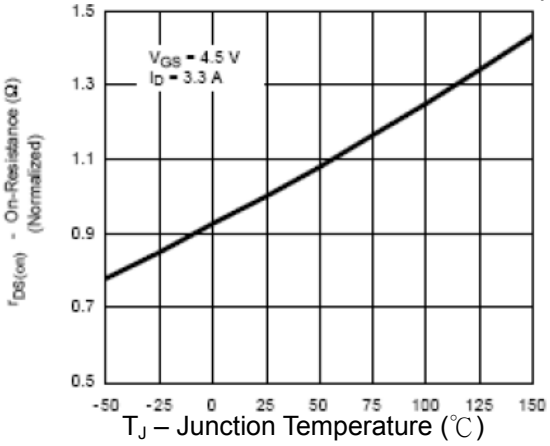


## Typical Characteristics

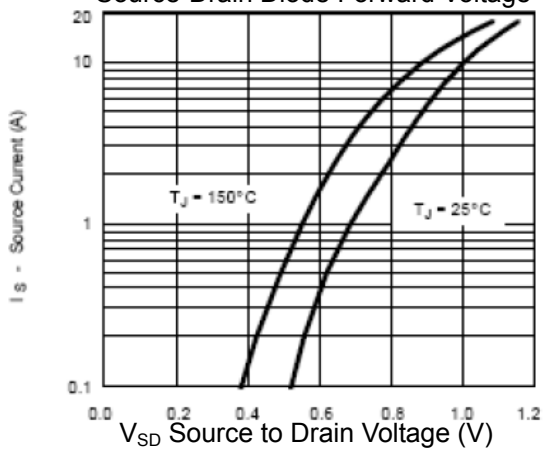
Gate Charge



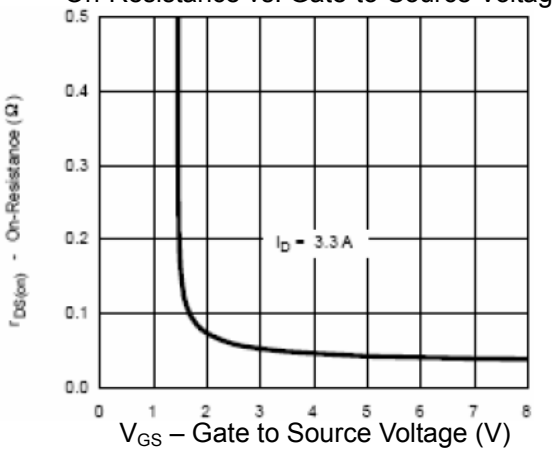

Normalized On-Resistance vs. Junction Temperature




Source-Drain Diode Forward Voltage

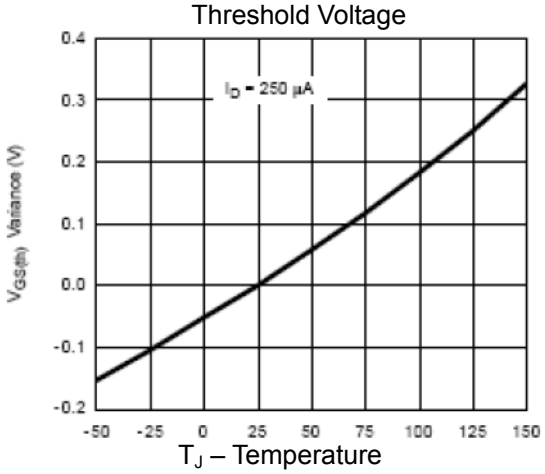



On-Resistance vs. Gate-to-Source Voltage

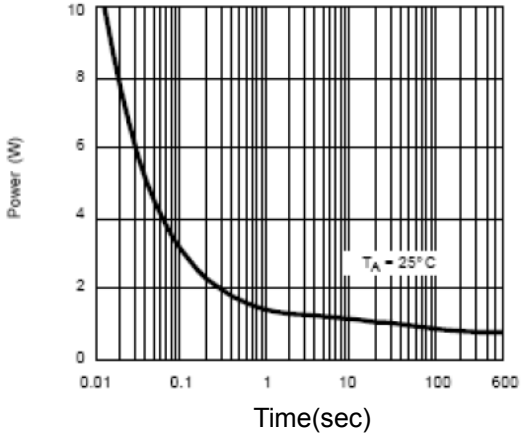


## Typical Characteristics

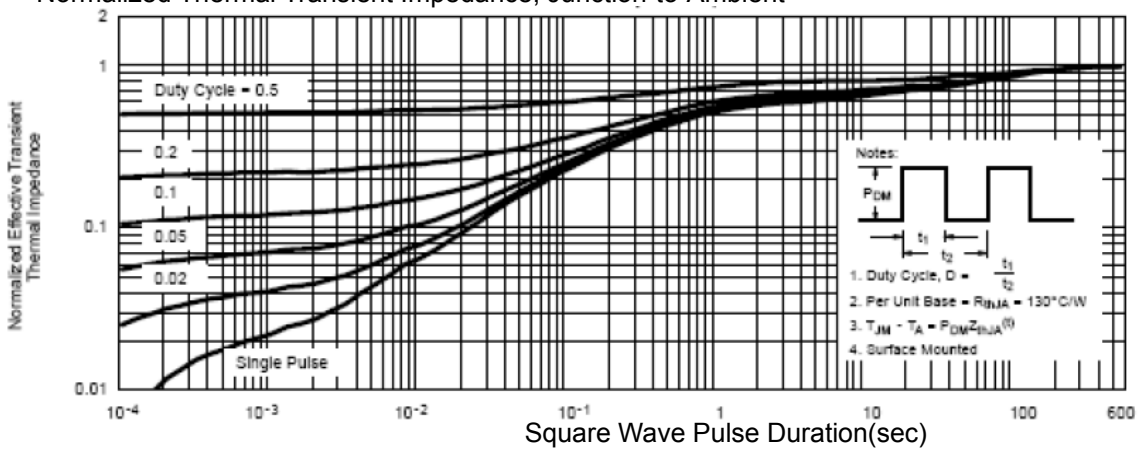
Threshold Voltage




Single Pulse Power

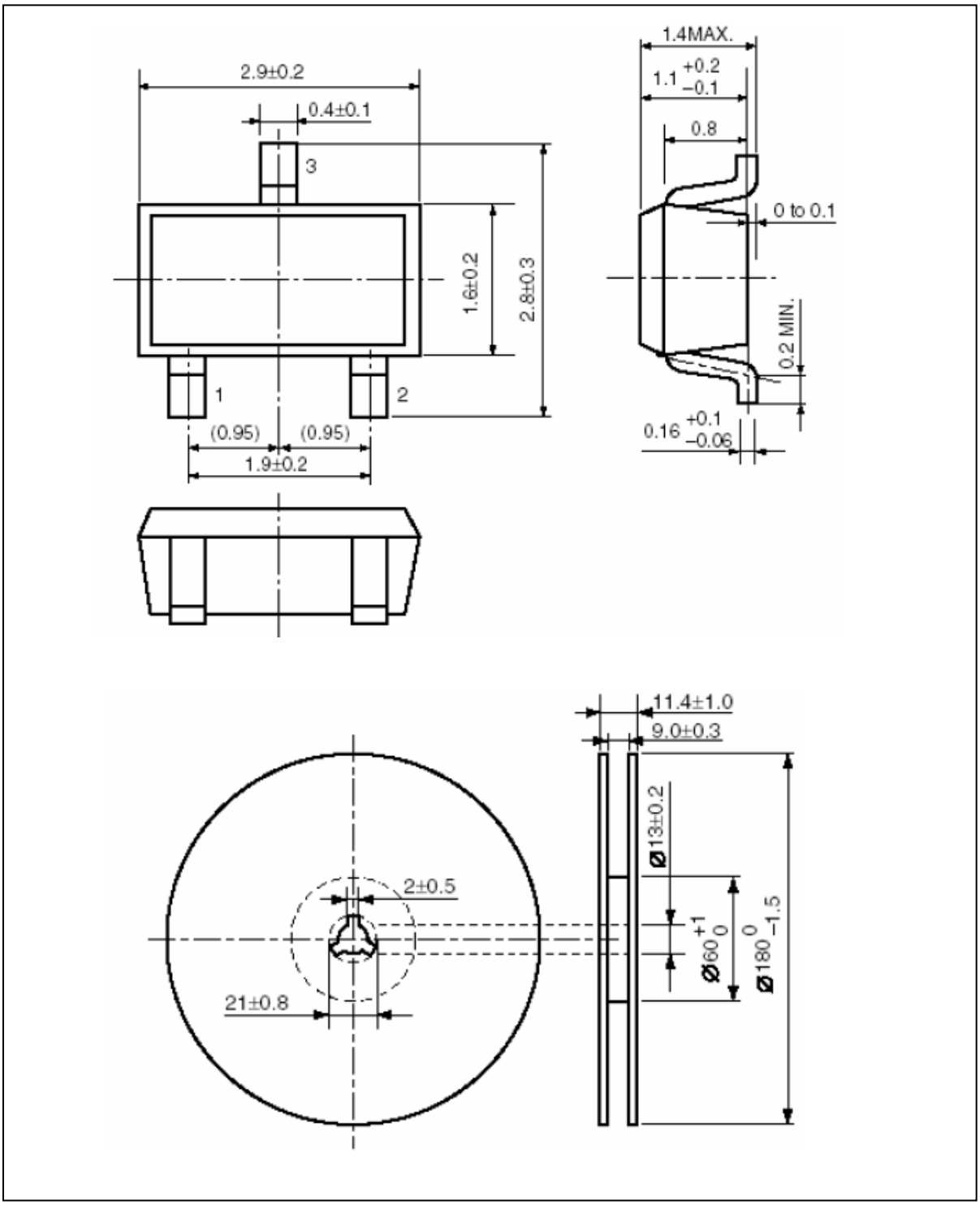



Normalized Thermal Transient Impedance, Junction-to-Ambient



## Packing Information

### SOT-23-3



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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