# ACE1715B

**N-Channel Enhancement Mode MOSFET**

## Description

The ACE1715B uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

## Features

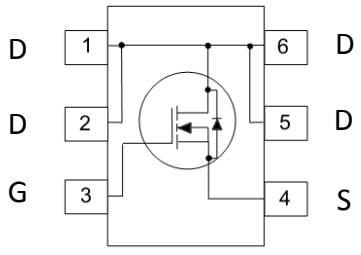
- $V_{DS}$ (V) = 150V
- $I_D$ = 1.5 ($V_{GS}$ = 10V)
- $R_{DS(ON)}$ < 450mΩ ($V_{GS}$ = 10V)
- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current

## Absolute Maximum Ratings $T_A$=25℃ unless otherwise noted

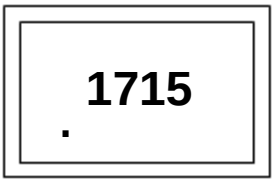
| Parameter | | Symbol | Ratings | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DSS}$ | 150 | V |
| Gate-Source Voltage | | $V_{GSS}$ | ±20 | V |
| Drain Current (Continuous) * AC | $T_A$=25°C | $I_D$ | 1.5 | A |
| | $T_A$=70°C | | 1.0 | |
| Drain Current (Pulse) * B | | $I_{DM}$ | 6 | |
| Power Dissipation | $T_A$=25°C | $P_D$ | 2 | W |
| | $T_A$=70°C | | 1.3 | |
| Operating temperature / storage temperature | | $T_J$,$T_{STG}$ | -55 to 150 | °C |

## Packaging Type

SOT-23-6L




Marking




## Ordering information

ACE1715B XX + H

- H: Halogen - free
- XX: Pb - free
- GM : SOT-23-6L

## Electrical Characteristics $T_A$=25 °C unless otherwise noted

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$=0V, $I_D$=250uA | 150 | | | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=150V, $V_{GS}$=0V | | | 1 | uA |
| Gate Threshold Voltage | $I_{GS(TH)}$ | $V_{GS}$= $V_{DS}$, $I_D$=250uA | 1.5 | 2.0 | 2.5 | V |
| Gate Leakage Current | $I_{GSS}$ | $V_{GS}$=±20V, $V_{DS}$=0V | | | ±100 | nA |
| Drain-Source On-state Resistance | $R_{DS(ON)}$ | $V_{GS}$=10V, $I_D$=1.5A | | 400 | 450 | mΩ |
| Forward Transconductance | $g_{FS}$ | $V_{DS}$=15V, $I_D$=1.5A | | 5 | | S |
| Diode Forward Voltage | $V_{SD}$ | $I_{SD}$=2A, $V_{GS}$=0V | | | 1.2 | V |
| Maximum Body-Diode Continuous Current | $I_S$ | | | | 2 | A |
| Switching | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{GS}$=10V,$V_{DS}$=75V, $I_D$=1.5A | | 8 | | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 1.4 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 2.1 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{GS}$=10V ,$V_{DS}$=75V, $R_L$=75Ω,$R_{GEN}$=6Ω | | 8 | | ns |
| Turn-On Rise Time | $t_f$ | | | 10 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 20 | | |
| Turn-Off Fall Time | $t_f$ | | | 15 | | |
| Dynamic | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{GS}$=0V ,$V_{DS}$=75V, F=1MHz | | 235 | | pF |
| Output Capacitance | $C_{oss}$ | | | 36 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 20 | | |

Note:

A: The value of RθJA is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with TA=25°C. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the t≤ 10s junction to ambient thermal resistance rating.

## Typical Performance Characteristics

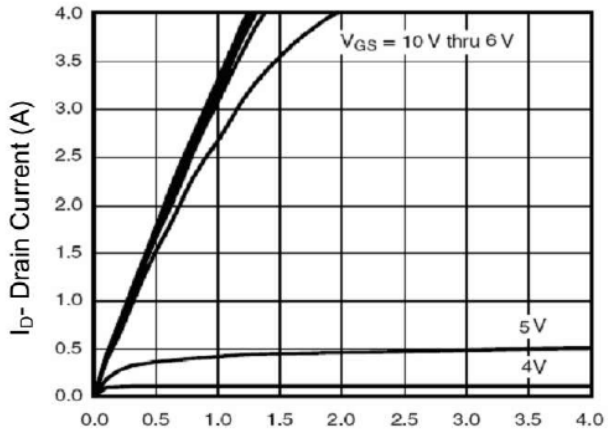



Figure 1 Output Characteristics

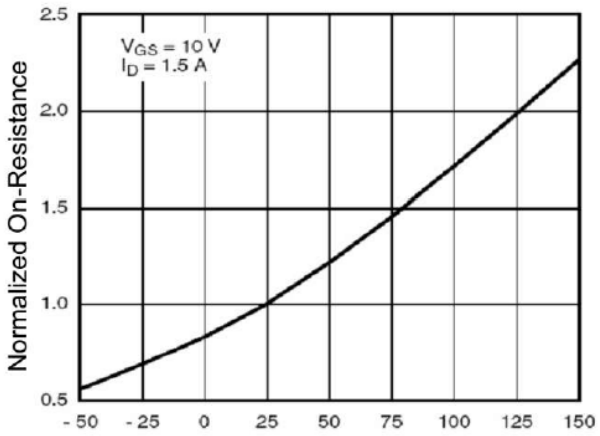



Figure 4 Rdson-Junction Temperature

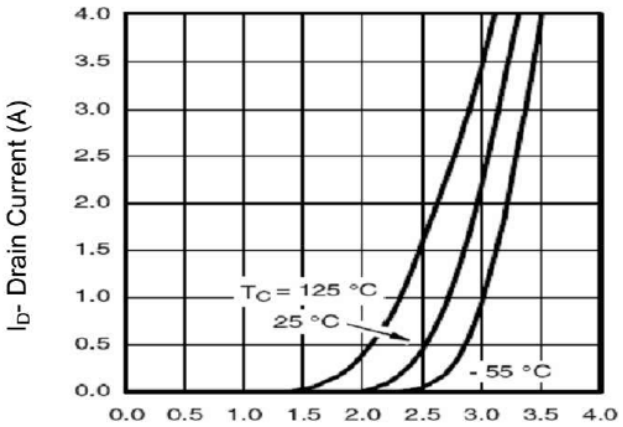



Figure 2 Transfer Characteristics

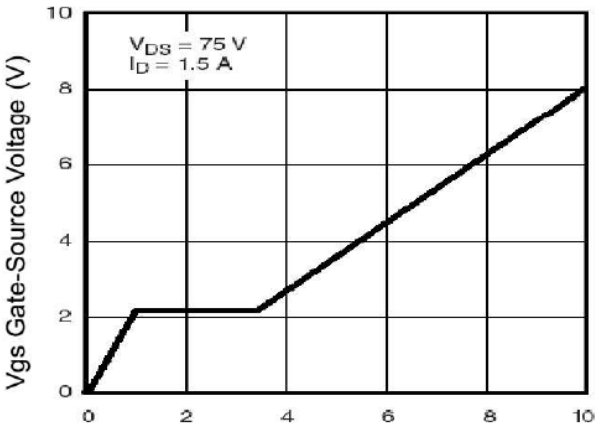



Figure 5 Gate Charge

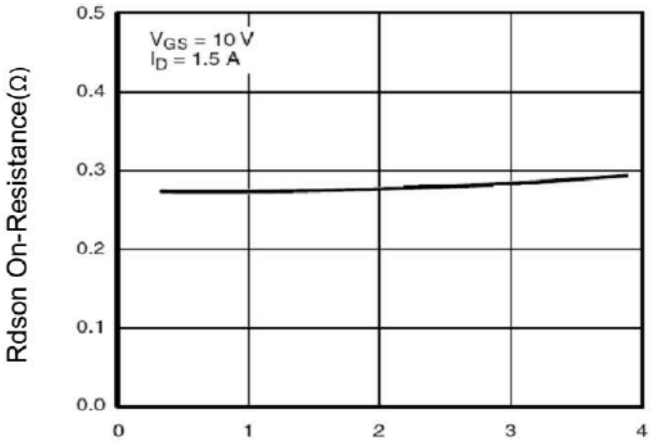



Figure 3 Rdson – Drain Current

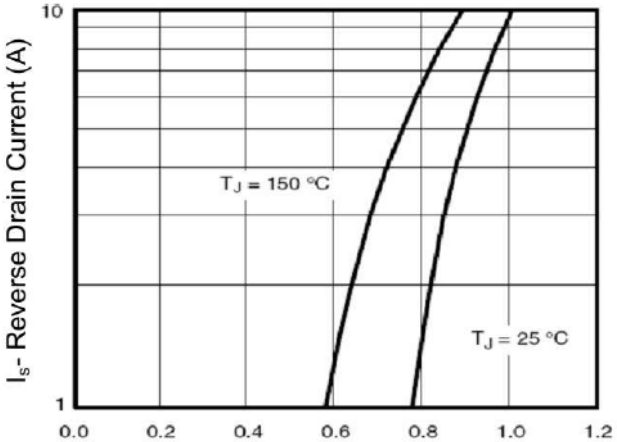
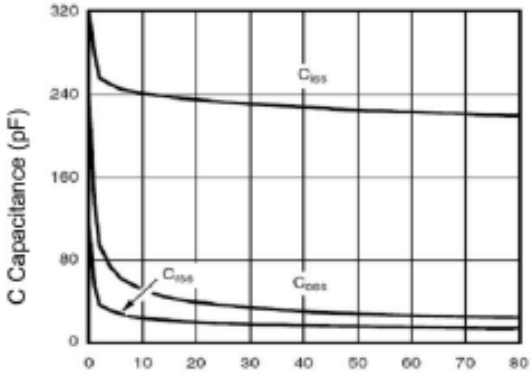
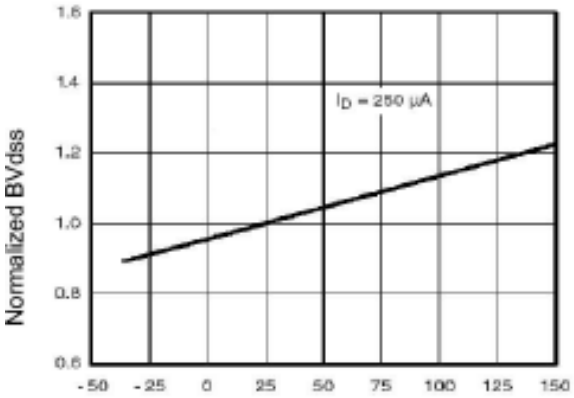



Figure 6 Source – Drain Diode Forward

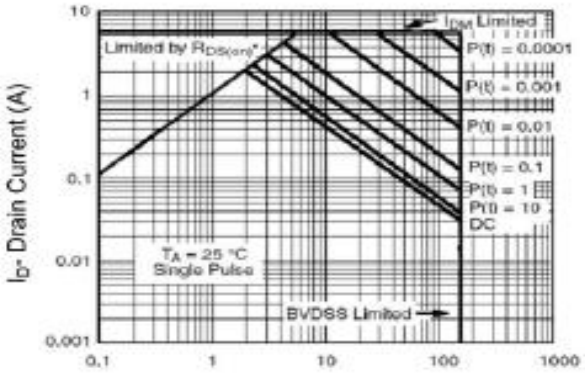
## Typical Performance Characteristics



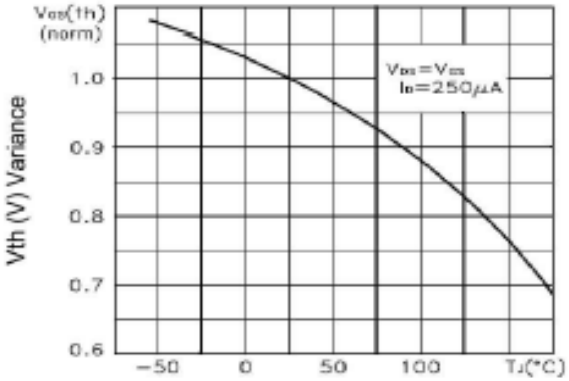

Vds Drain -Source Voltage (V)
Figure 7 Capacitance vs Vds



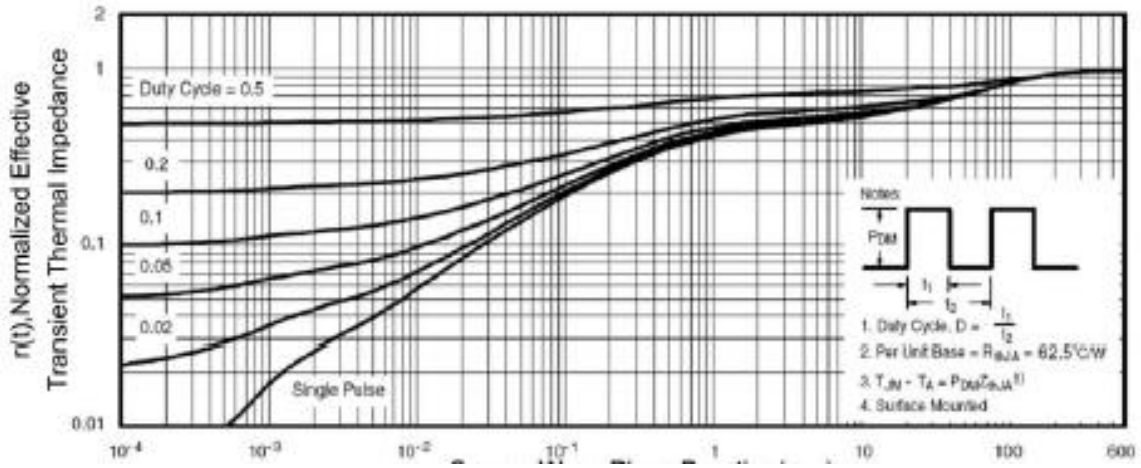

TJ -Junction Temperature (℃)
Figure 9 BVDSS vs Junction Temperature




Vds Drain -Source Voltage(V)
Figure 8 Safe Operation Area



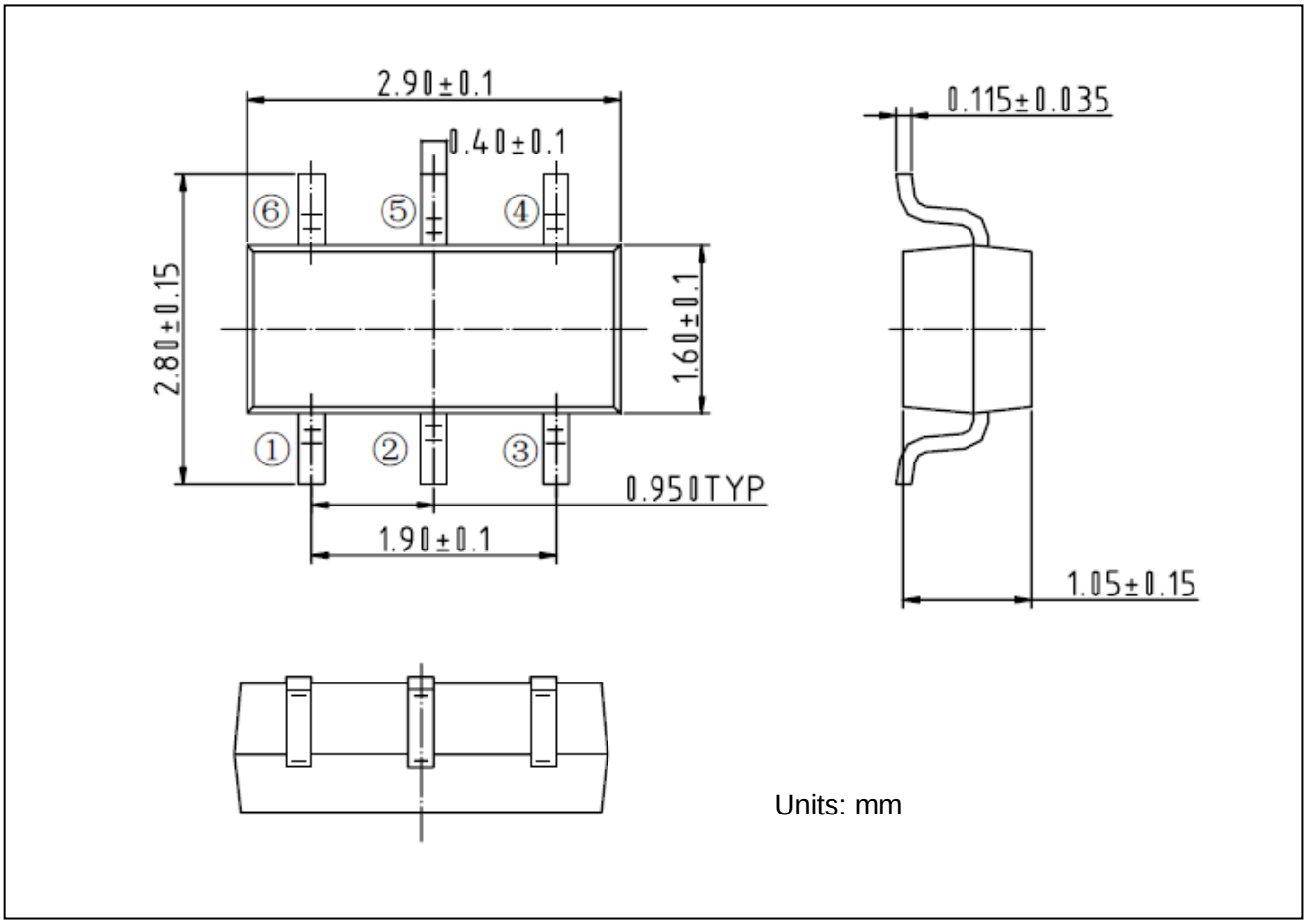

TJ -Junction Temperature (℃)
Figure 10 Power De-rating




Square Wave Pluse Duration)sec)
Figure 11 Normalized Maximum Transient Thermal Impedance

## Packing Information

### SOT-23-6L



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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