



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

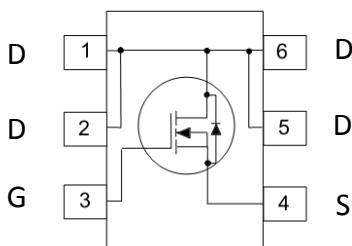
- V_{DS} (V) = 150V
- $I_D = 1.5$ (VGS = 10V)
- $R_{DS(ON)} < 450m\Omega$ (VGS = 10V)
- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current

Absolute Maximum Ratings $T_A=25^\circ\text{C}$ unless otherwise noted

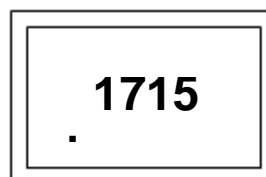
Parameter	Symbol	Rated	Unit
Drain-Source Voltage	V_{DSS}	150	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current (Continuous) * AC	I_D	$T_A=25^\circ\text{C}$	1.5
		$T_A=70^\circ\text{C}$	1.0
Drain Current (Pulse) * B	I_{DM}	6	A
Power Dissipation	P_D	$T_A=25^\circ\text{C}$	2
		$T_A=70^\circ\text{C}$	1.3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

Packaging Type

SOT-23-6L

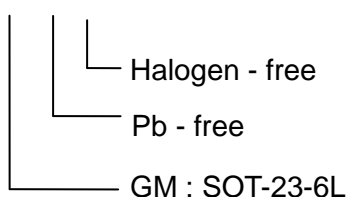


Marking



Ordering information

ACE1715B XX + H





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Electrical Characteristics $T_A=25^\circ\text{C}$ unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	150			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=150V, V_{GS}=0V$			1	μA
Gate Threshold Voltage	$I_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.5	2.0	2.5	V
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Drain-Source On-state Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=1.5A$		400	450	m Ω
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	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=75V, R_L=75\Omega, R_{GEN}=6\Omega$		8		ns
Turn-On Rise Time	t_r			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 $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The value in any given application depends on the user's specific board design.

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

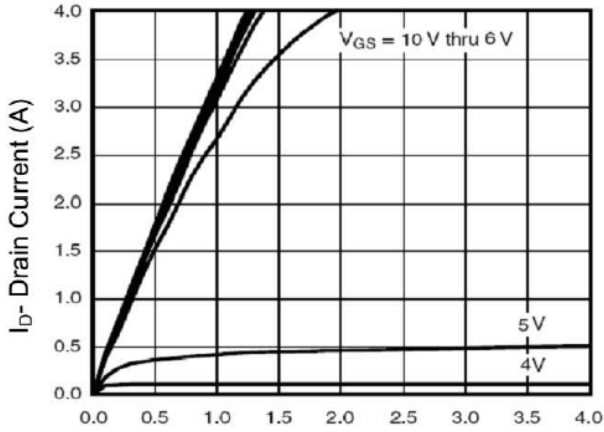
C: The current rating is based on the $t \leq 10s$ junction to ambient thermal resistance rating.



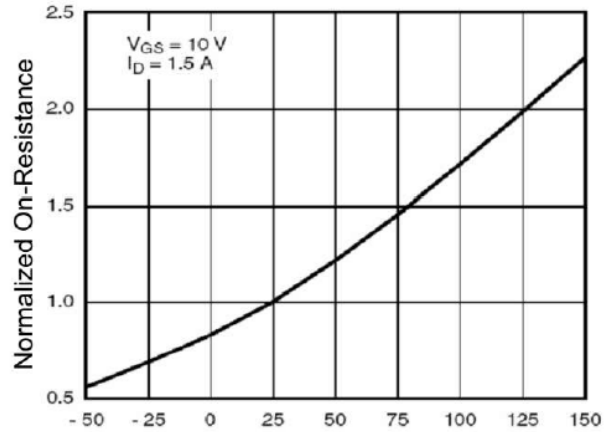
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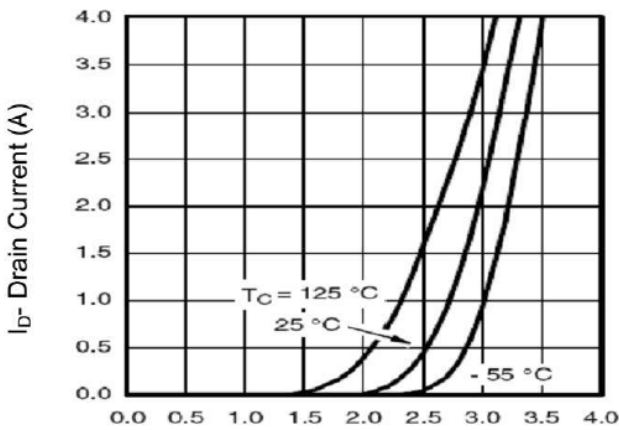
Typical Performance Characteristics



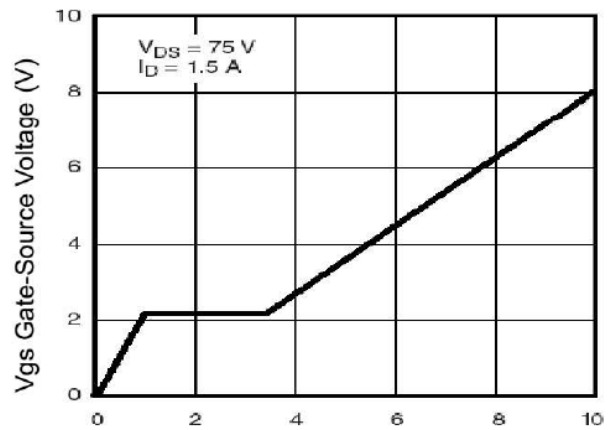
Vds Drain Source Voltage(V)
Figure 1 Output Characteristics



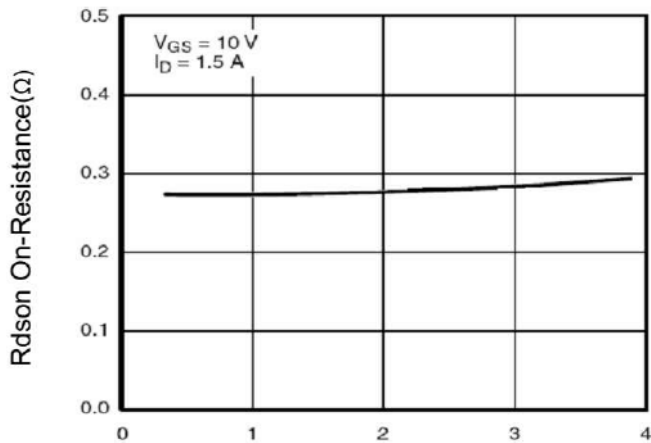
TJ -Junction Temperature (°C)
Figure 4 Rdson-Junction Temperature



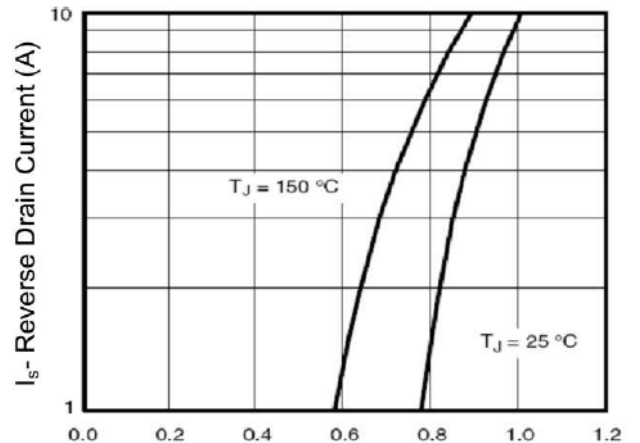
Vgs Gate-Source Voltage(V)
Figure 2 Transfer Characteristics



Qg Gate Charge(nC)
Figure 5 Gate Charge



ID-Drain Current(A)
Figure 3 Rdson – Drain Current



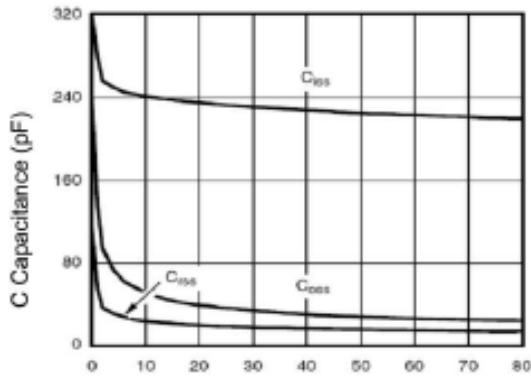
Vsd Source-Drain Voltage(V)
Figure 6 Source – Drain Diode Forward



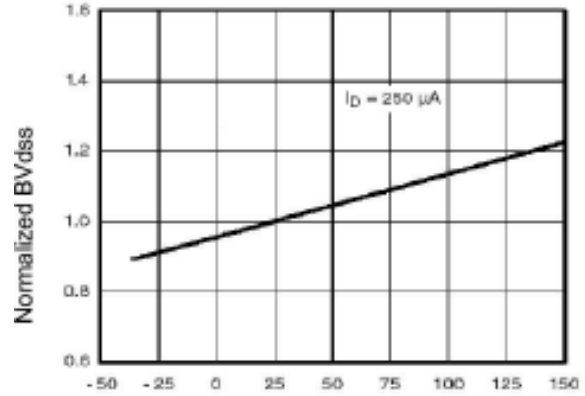
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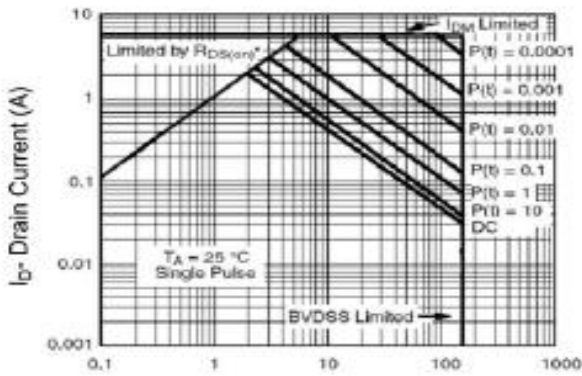
Typical Performance Characteristics



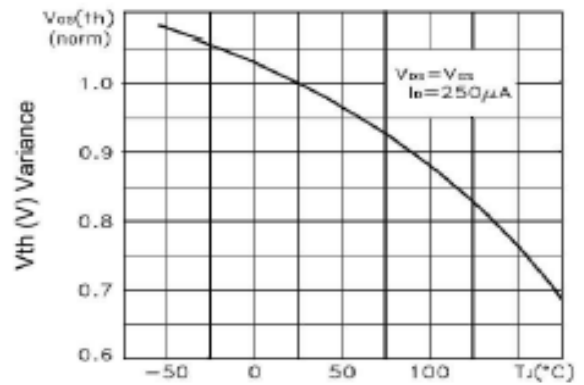
Vds Drain -Source Voltage (V)
Figure 7 Capacitance vs Vds



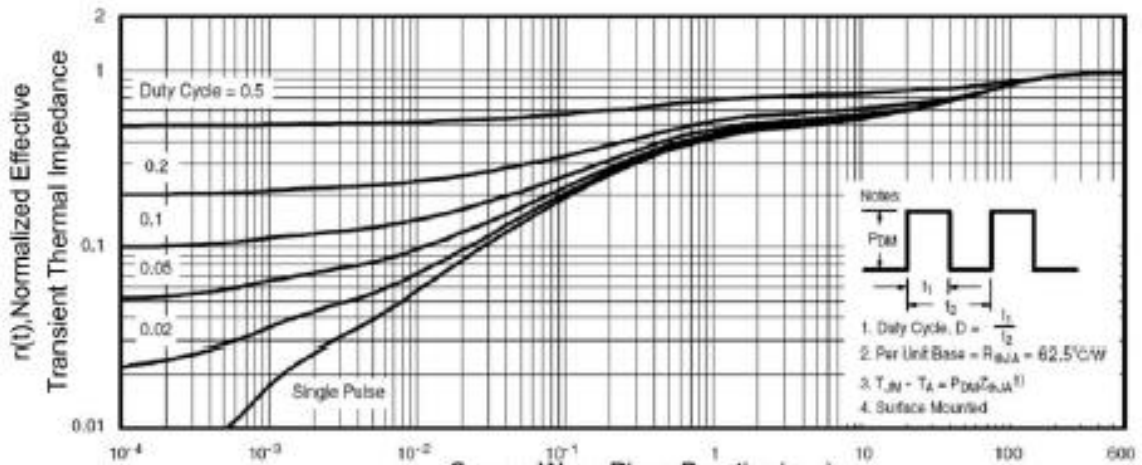
TJ -Junction Temperature (°C)
Figure 9 BVDSS vs Junction Temperature



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



TJ -Junction Temperature (°C)
Figure 10 Power De-rating



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

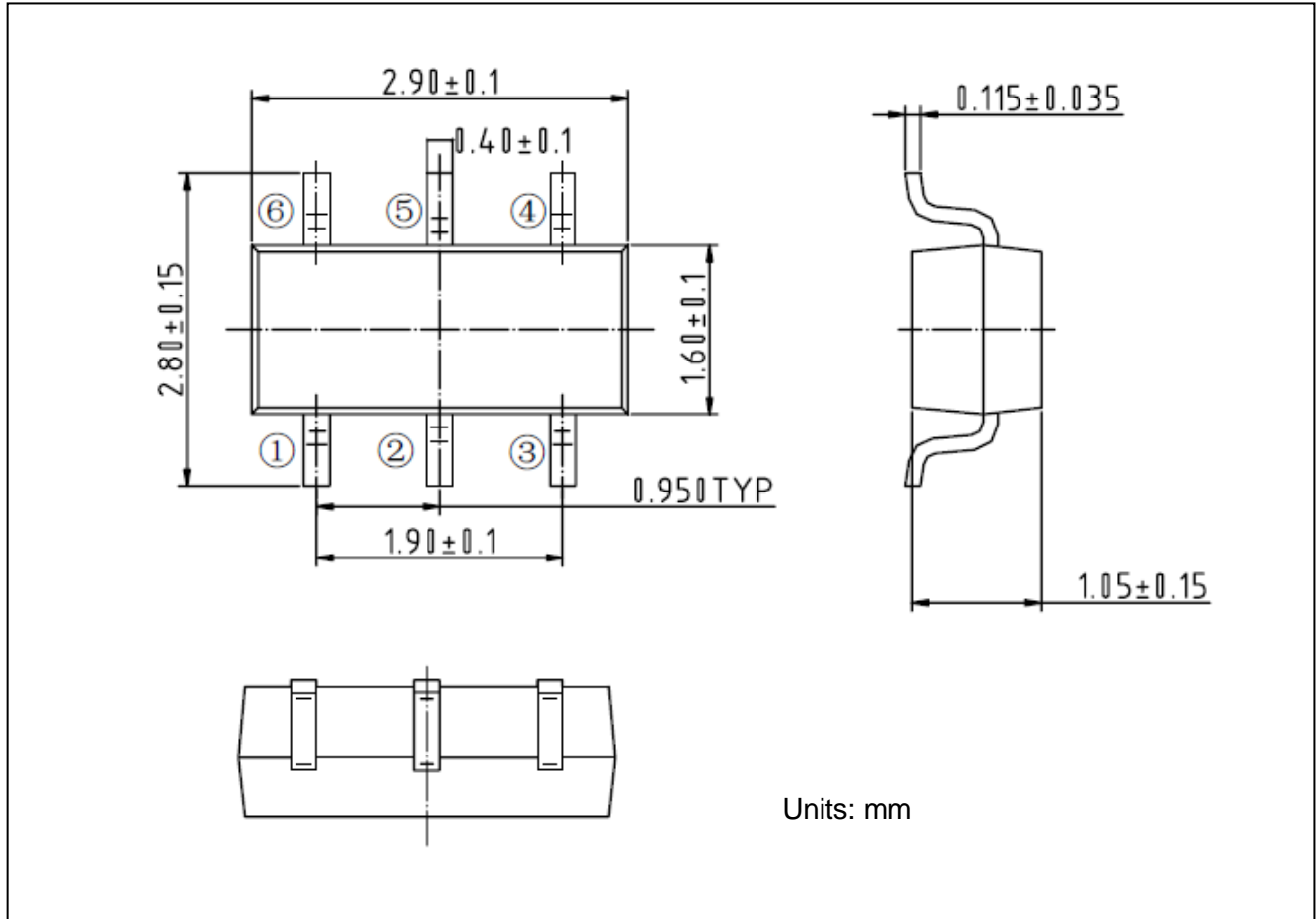


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Packing Information

SOT-23-6L





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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.

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