



ACE1632B

N-Channel Enhancement Mode Field Effect Transistor

Description

ACE1632B 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

- $V_{DS} = 60V$, $I_D = 20A$
- $R_{DS(ON)} \leq 45m\Omega @ V_{GS} = 10V$
- $R_{DS(ON)} \leq 55m\Omega @ V_{GS} = 4.5V$

Absolute Maximum Ratings

Parameter		Symbol	Max	Unit
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current (Continuous) ^{*AC}	$T_A = 25^\circ C$	I_D	20	A
	$T_A = 100^\circ C$		14	
Drain Current (Pulse) ^{*B}		I_{DM}	60	A
Power Dissipation	$T_A = 25^\circ C$	P_D	40	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~175	$^\circ C$

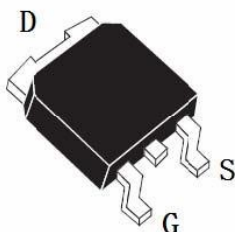
A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ C$. The value in any given application depends on the user's specific board design.

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.

Packaging Type

TO-252



Ordering information

ACE1632B XX + H

- └─ Halogen - free
- └─ Pb - free
- └─ YM : TO-252



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Electrical Characteristics

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 48V, V_{GS} = 0V$			1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_{DS} = 250\mu A$	1	1.7	3	V
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 10A$			45	m Ω
		$V_{GS} = 4.5V, I_D = 5A$			55	m Ω
Forward Transconductance	g_{FS}	$V_{DS} = 5V, I_D = 4.5A$	11			S
Diode Forward Voltage	V_{SD}	$I_{SD} = 1A, V_{GS} = 0V$			1.2	V
Diode Forward Current	I_S				20	A
Switching						
Total Gate Charge	Q_g	$V_{DS} = 30V, I_D = 4.5A,$ $V_{GS} = 10V$		14		nC
Gate-Source Charge	Q_{gs}			3		nC
Gate-Drain Charge	Q_{gd}			5		nC
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 30V, R_L = 6.7\Omega,$ $V_{GS} = 10V, R_{GEN} = 3\Omega$		5		ns
Turn-on Rise Time	t_r			2.6		ns
Turn-off Delay Time	$t_{d(off)}$			16		ns
Dynamic						
Input Capacitance	C_{iss}	$V_{DS} = 30V, V_{GS} = 0V,$ $f = 1.0MHz$		500		pF
Output Capacitance	C_{oss}			60		pF
Reverse Transfer Capacitance	C_{rss}			25		pF



Typical Performance Characteristics

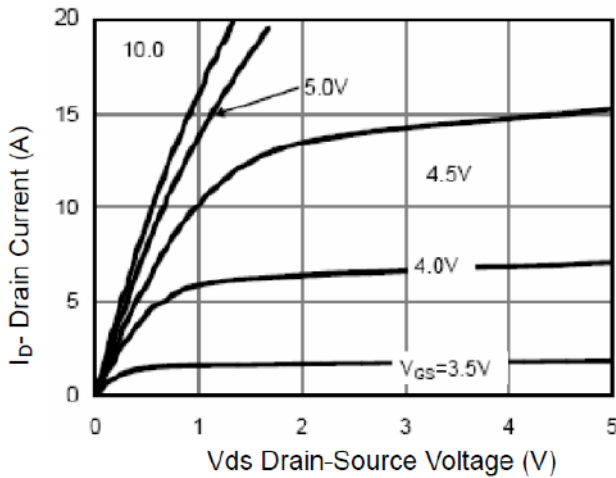


Figure 1 Output Characteristics

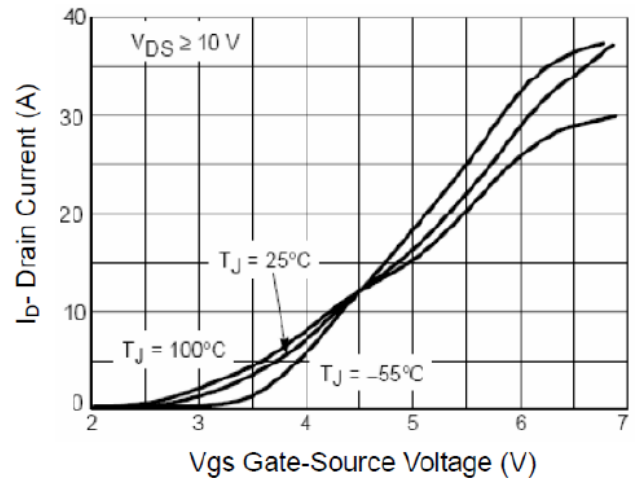


Figure 2 Transfer Characteristics

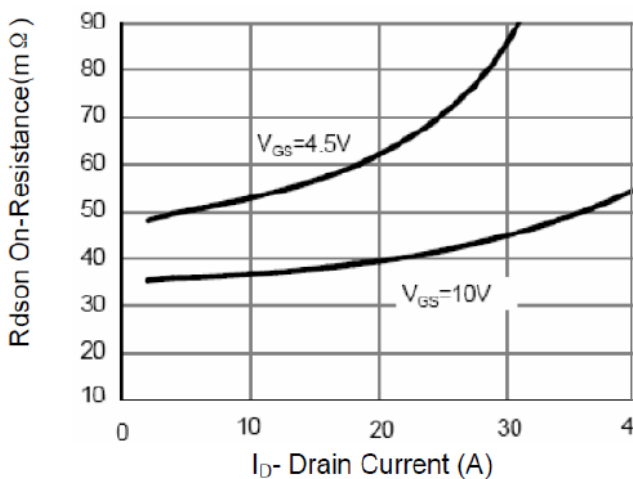


Figure 3 Rdson- Drain Current

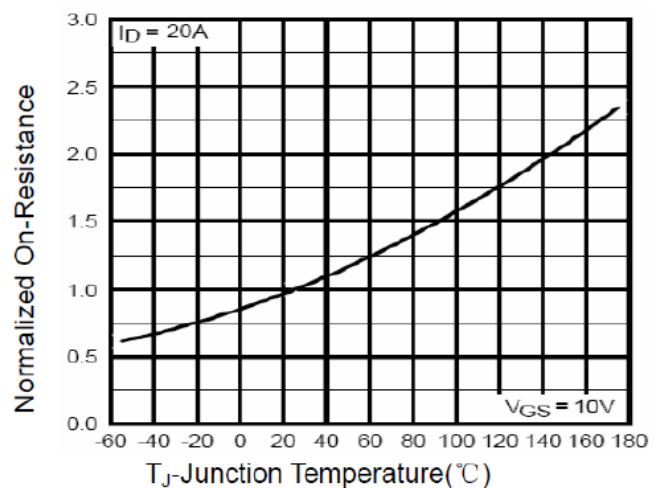


Figure 4 Rdson-Junction Temperature

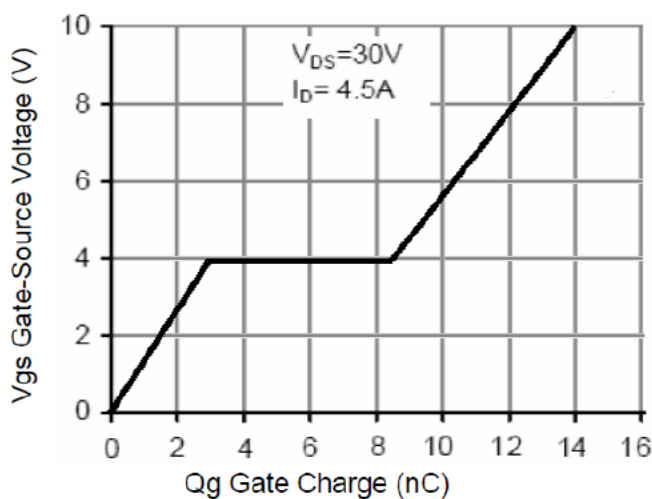


Figure 5 Gate Charge

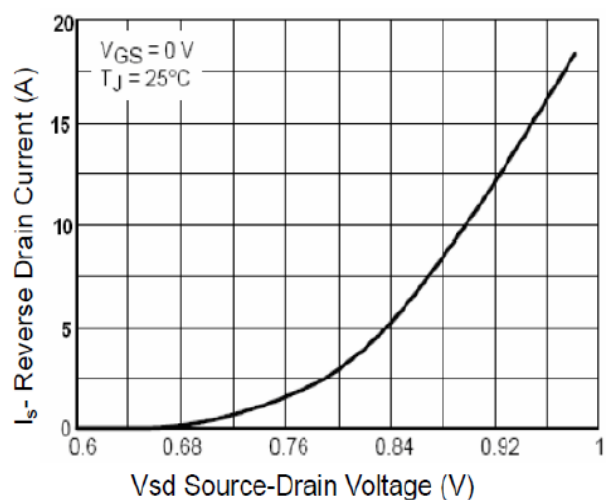


Figure 6 Source- Drain Diode Forward



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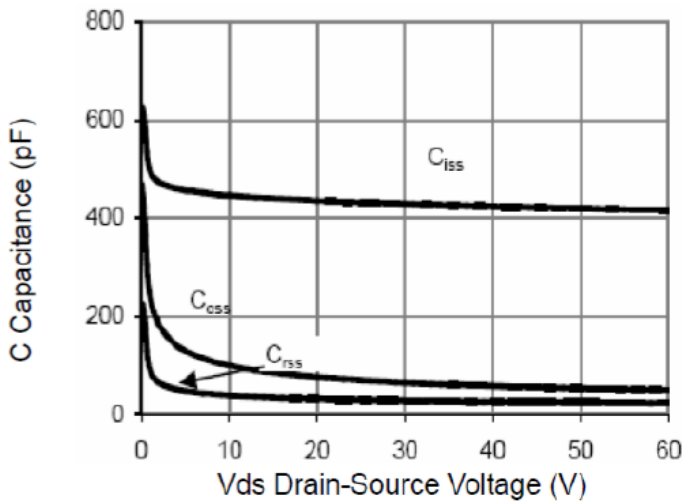


Figure 7 Capacitance vs Vds

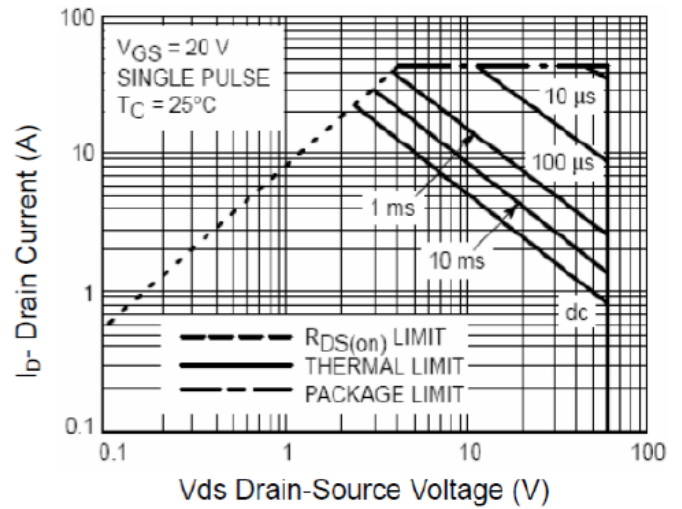


Figure 8 Safe Operation Area

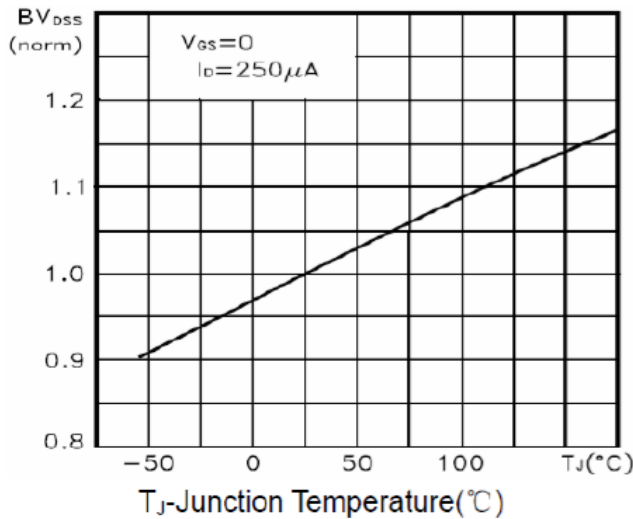


Figure 9 BV_{DSS} vs Junction Temperature

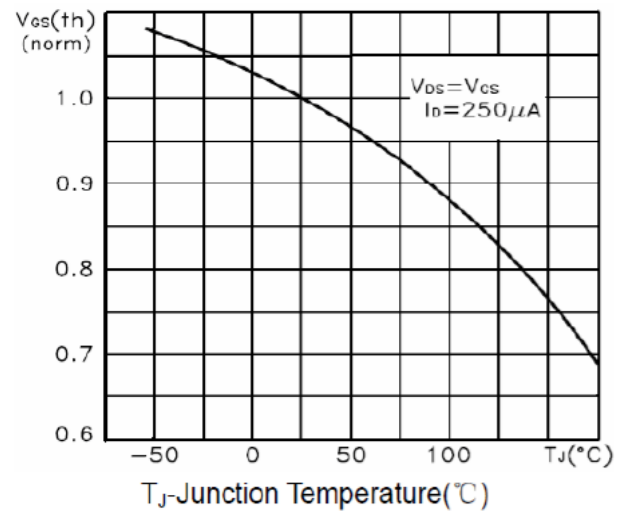


Figure 10 $V_{GS(th)}$ vs Junction Temperature

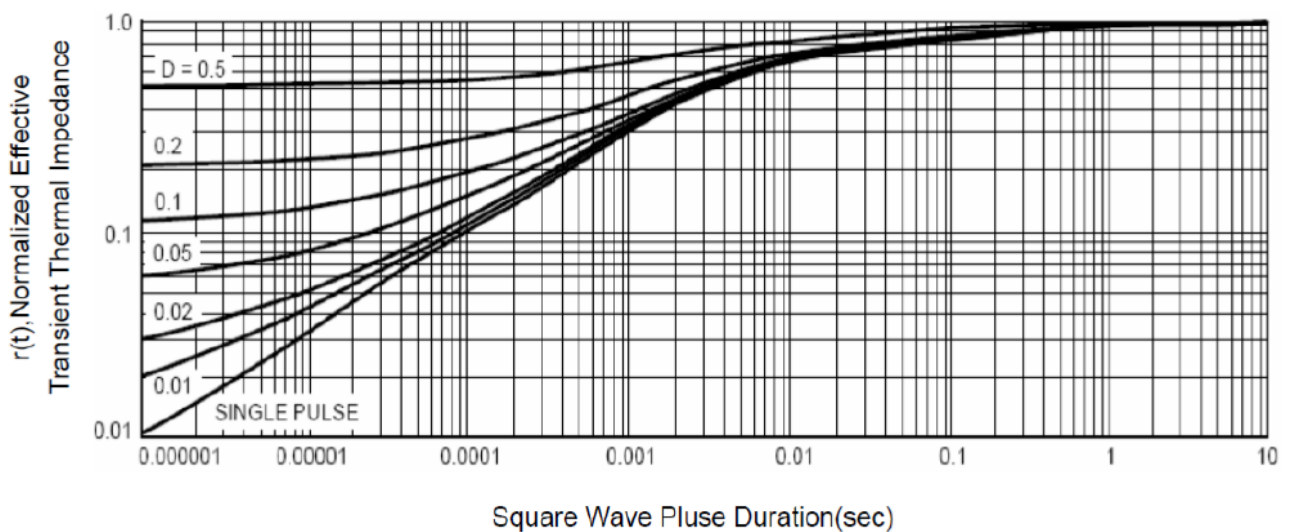


Figure 11 Normalized Maximum Transient Thermal Impedance

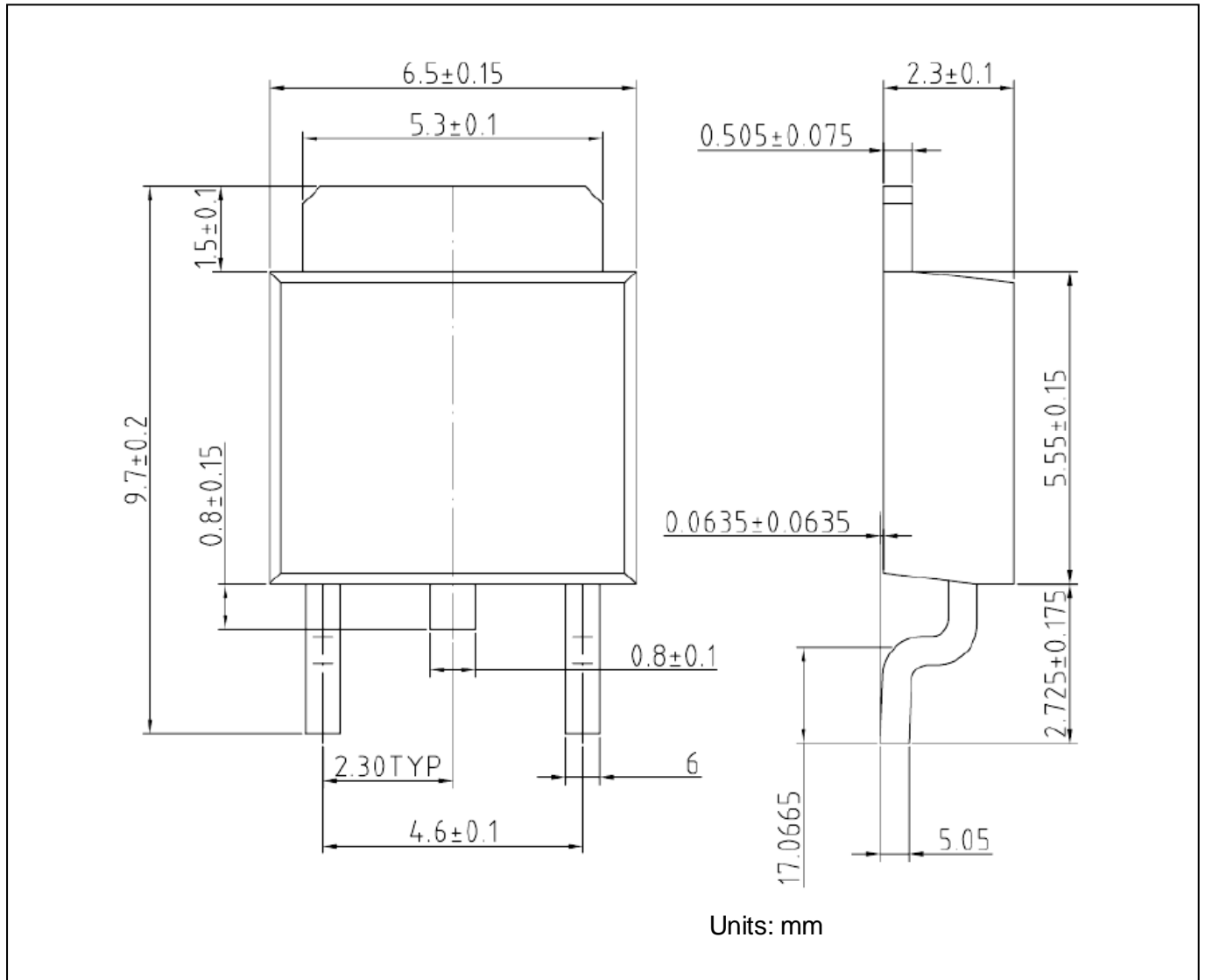


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Packing Information

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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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