ACE4440B

N-Channel Enhancement Mode MOSFET

Description

The ACE4440B uses advanced trench technology to provide excellent RDS(ON) and low gate charge. This device is suitable for use as a load switch or in PWM applications. The source leads are separated to allow a Kelvin connection to the source, which may be used to bypass the source inductance.

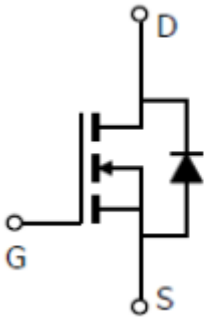
Features

- V_{DS}=60V
- I_D=6A (V_{GS}=10V)
- $R_{DS(ON)}$<35mΩ (V_{GS}=10V)
- $R_{DS(ON)}$<40mΩ (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)	T_A=25℃	I_D	6	A
	T_A=70℃		4.8	
Drain Current (Pulsed)		I_{DM}	30	A
Power Dissipation	T_A=25℃	P_D	3	W
	T_A=70℃		2	
Operating temperature / storage temperature		T_J/T_{STG}	-55~150	℃

Packaging Type



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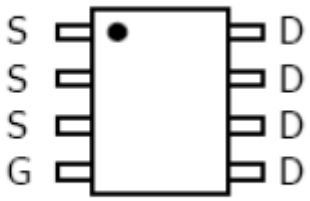

Ordering information

ACE4440B XX + H

- Halogen - free
- Pb - free
- FM : SOP-8

Electrical Characteristics

T_A=25℃, unless otherwise specified.

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	60			V
Zero gate voltage drain current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			1	μA
Gate threshold voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_{DS}=250μA	1	1.4	3	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=5A		26	35	mΩ
		V_{GS}=4.5V, I_D=4A		31	40	
Forward transconductance	g_{FS}	V_{DS}=15V, I_D=5.3A		24		S
Diode forward voltage	V_{SD}	I_{SD}=1A, V_{GS}=0V		0.75	1	V
Maximum body-diode continuous current	I_S				3.1	A
Switching						
Total gate charge	Qg	V_{GS}=5V, V_{DS}=30V, I_D=5.3A		11.26	14.64	nC
Gate-source charge	Qgs			3.77	4.9	
Gate-drain charge	Qgd			4.08	5.3	
Turn-on delay time	$t_{d(on)}$	V_{GS}=4.5V, V_{DS}=30V R_L=6.8Ω, R_{GEN}=1Ω		18.12	36.24	ns
Turn-on rise time	Tr			17.68	35.36	
Turn-off delay time	$t_{d(off)}$			25	50	
Turn-off fall time	Tf			8.92	17.84	
Dynamic						
Input capacitance	Ciss	V_{GS}=0V, V_{DS}=30V, f=1.0MHz		1062.8		pF
Output capacitance	Coss			157.26		
Reverse transfer capacitance	Crss			56.56		

Note :

1. 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°C. The value in any given application depends on the user's specific board design.
2. Repetitive rating, pulse width limited by junction temperature.
3. The current rating is based on the t≤ 10s junction to ambient thermal resistance rating.

Typical Performance Characteristics

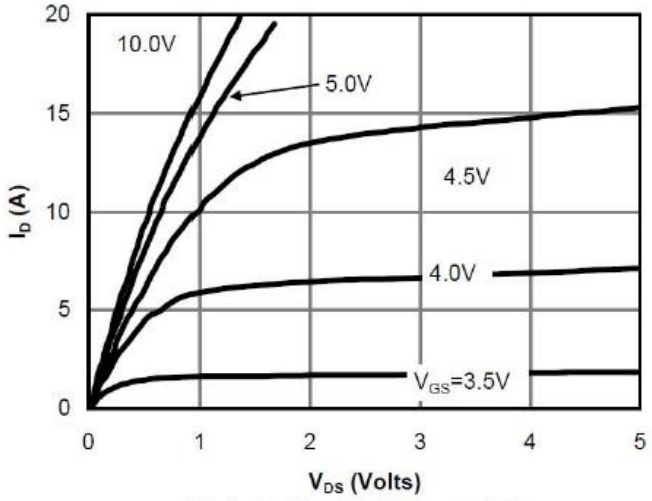

Fig 1: On-Region Characteristics

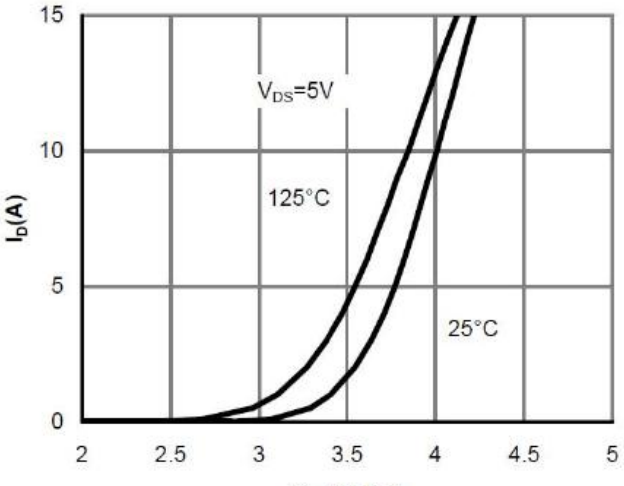

Figure 2: Transfer Characteristics

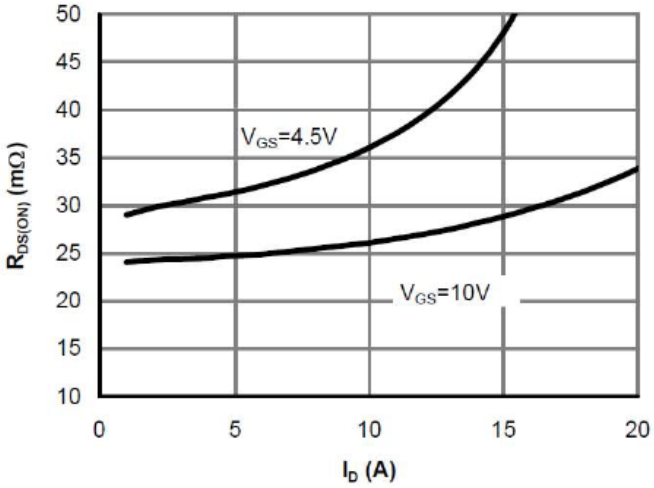

Figure 3: On-Resistance vs. Drain Current and Gate Voltage

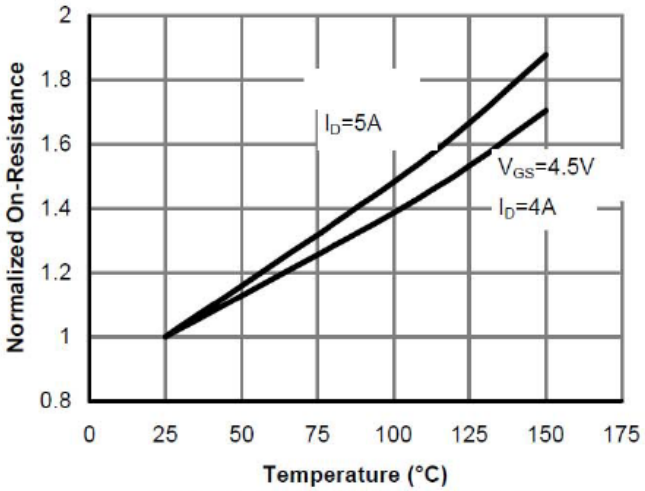

Figure 4: On-Resistance vs. Junction Temperature

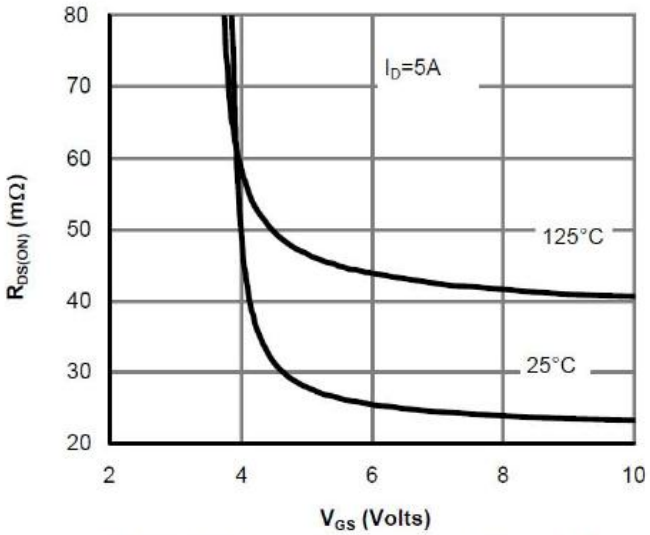

Figure 5: On-Resistance vs. Gate-Source Voltage

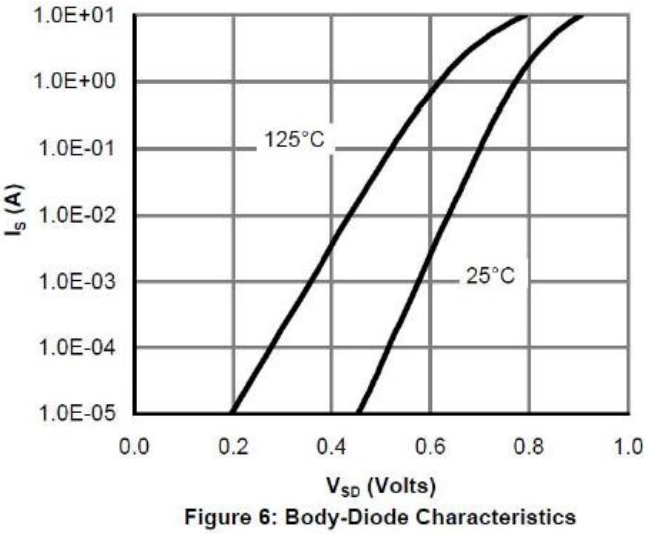

Figure 6: Body-Diode Characteristics

Typical Performance Characteristics

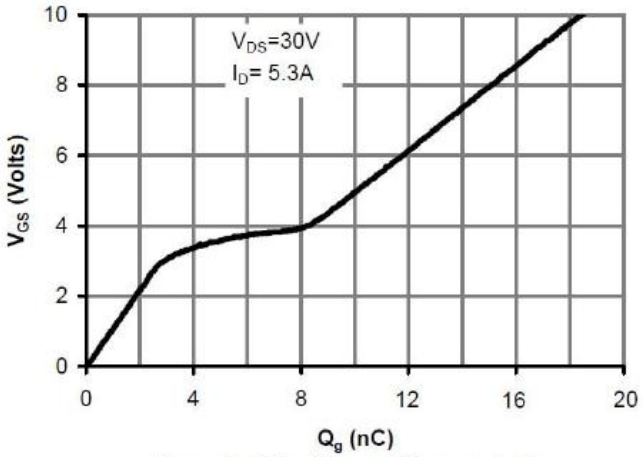

Figure 7: Gate-Charge Characteristics

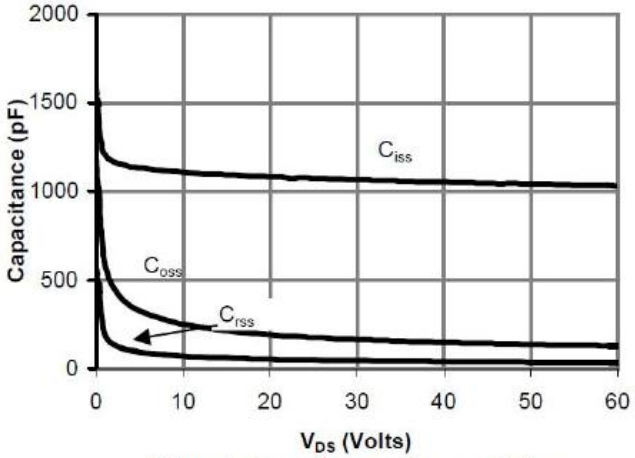

Figure 8: Capacitance Characteristics

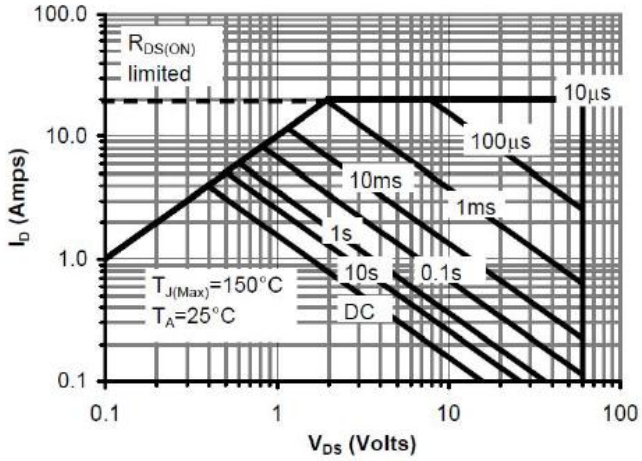

Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

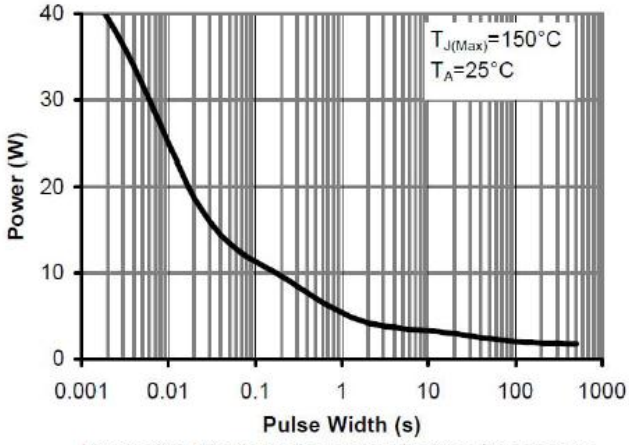

Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

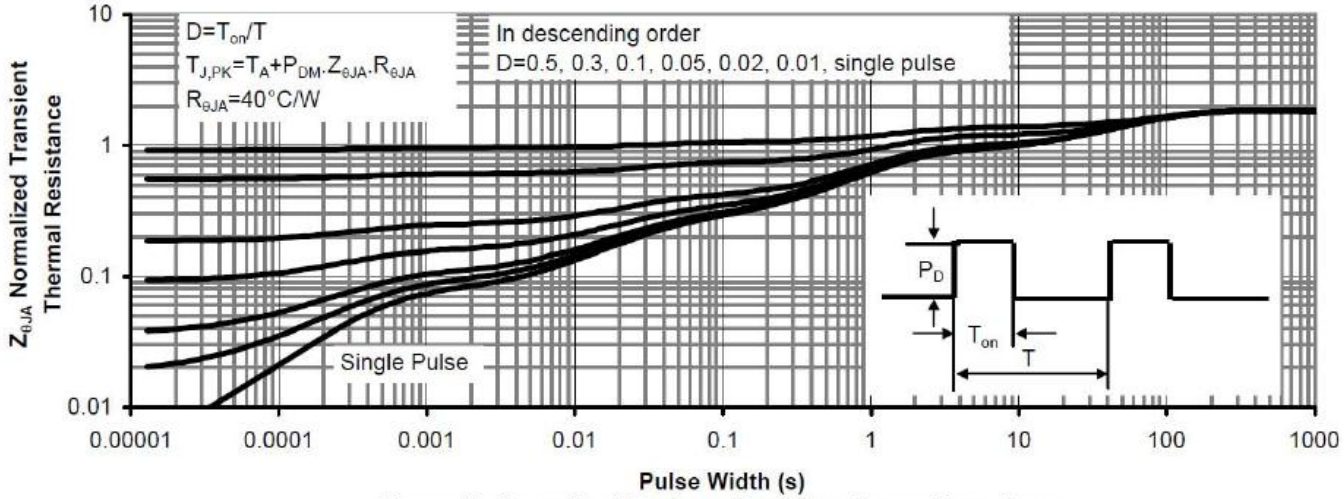

Figure 11: Normalized Maximum Transient Thermal Impedance

Packing Information

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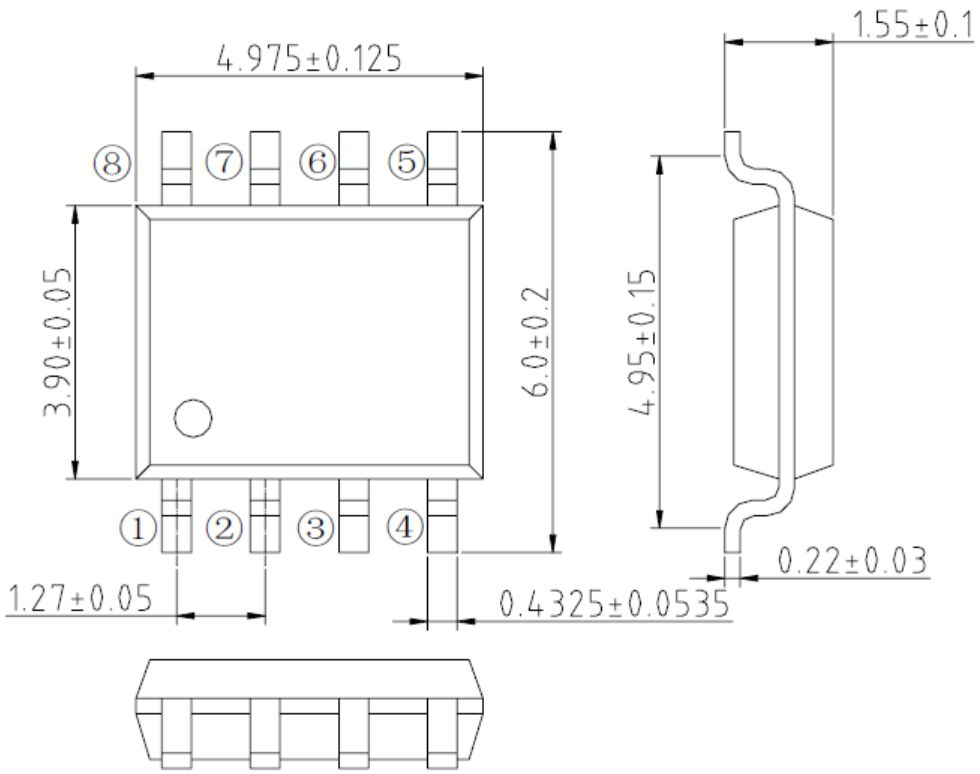

Unit: mm

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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