



ACE11543B

P-Channel Enhancement Mode Field Effect Transistor

Features

- $V_{DS} = -20V$, $I_D = -7A$
- $R_{DS(ON)} @ V_{GS} = -4.5V$, TYP=29m Ω
- $R_{DS(ON)} @ V_{GS} = -2.5V$, TYP=34m Ω

General Description

- load switch
- other general applications

Absolute Maximum Ratings @ $T_A = 25^\circ C$ unless otherwise noted

Parameter	Symbol	Max	Unit
Drain-Source Voltage	V_{DSS}	-20	V
Gate-Source Voltage	V_{GSS}	± 12	V
Drain Current (Continuous)*AC	I_D	$T_A = 25^\circ C$	-7.0
		$T_A = 70^\circ C$	-4.9
Drain Current (Pulsed)*B	I_{DM}	-20	A
Power Dissipation	P_D	1.7	W
Operating temperature / Storage temperature	T_J / T_{STG}	-55~150	$^\circ C$

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.

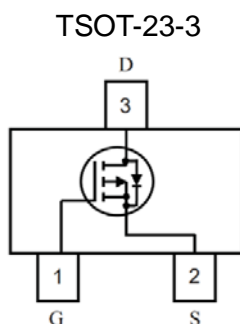
B: Repetitive rating, pulse width limited by junction temperature.

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

Thermal Resistance Ratings

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient	R_{thJA}	78	100	$^\circ C/W$

Packaging Type





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Ordering information

ACE11543B XX + H

└──┬──┘	Halogen - free
└──┬──┘	Pb - free
└──┬──┘	BMS: TSOT-23-3

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

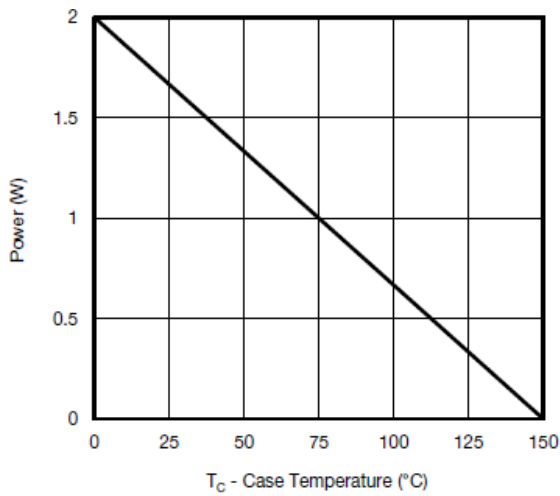
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$			-1	μA
Gate threshold voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_{DS}=-250\mu A$	-0.4	-0.6	-1.2	V
Gate leakage current	I_{GSS}	$V_{GS}=\pm 10V, V_{DS}=0V$			± 100	μA
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-5A$		29	40	m Ω
		$V_{GS}=-2.5V, I_D=-2A$		34	50	
Forward Trans conductance	g_{FS}	$V_{DS}=-5V, I_D=-4A$		8		S
Diode forward voltage	V_{SD}	$I_{SD}=-1A, V_{GS}=0V$			-1.2	V
Diode Forward Current	I_S	$T_C=25^\circ\text{C}$			-4	A
Switching						
Total Gate Charge	Q_g	$V_{GS}=-4.5V, V_{DS}=-10V,$ $I_D=-4.5A$		13.8		nC
Gate-Source Charge	Q_{gs}			1.9		
Gate-Drain Charge	Q_{gd}			3		
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=-10V, R_L=2.8\Omega$ $I_D=-3.6A, V_{GS}=-4.5V$ $R_G=1\Omega$		22		ns
Turn-on Rise Time	t_r			21		
Turn-off Delay Time	$t_{d(off)}$			62		
Turn-off Fall Time	t_f			14		
Dynamic						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=-10V,$ $f=1.0\text{MHz}$		1200		pF
Output Capacitance	C_{oss}			120		
Reverse Transfer Capacitance	C_{rss}			117		



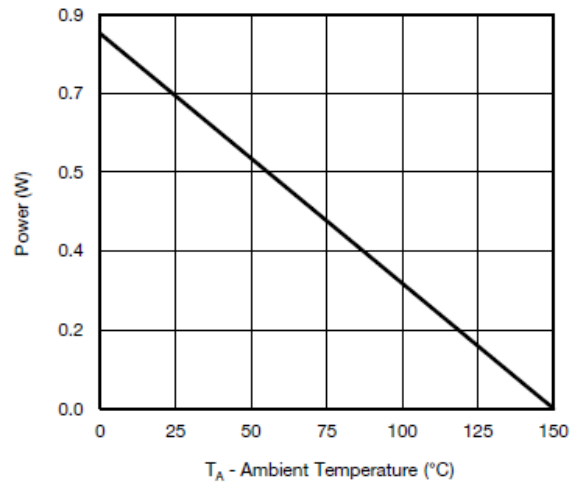
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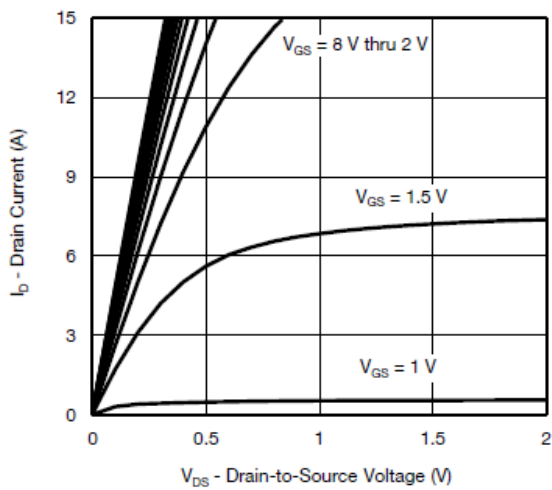
Typical Performance Characteristics



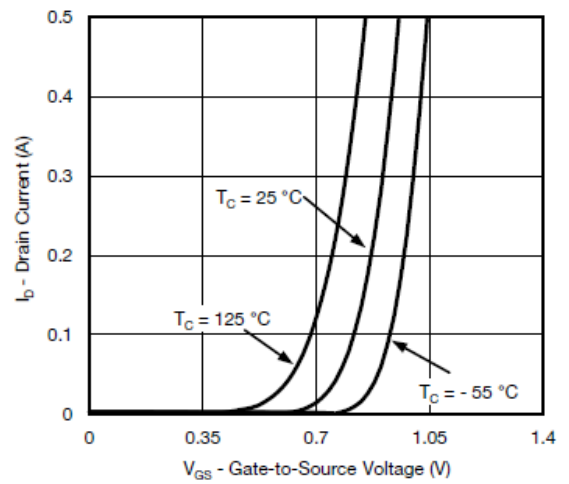
Power Junction-to-Case



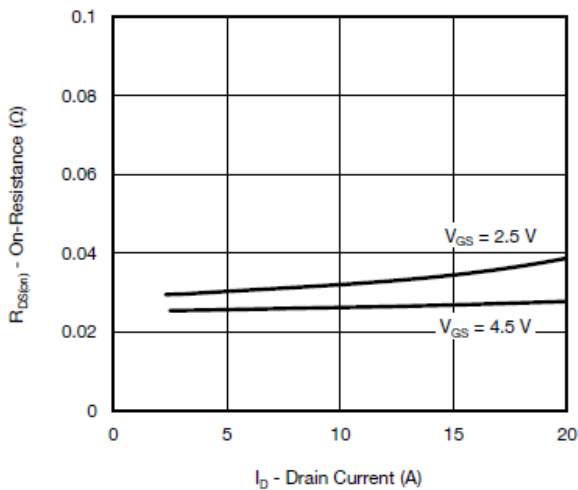
Power Junction-to-Ambient



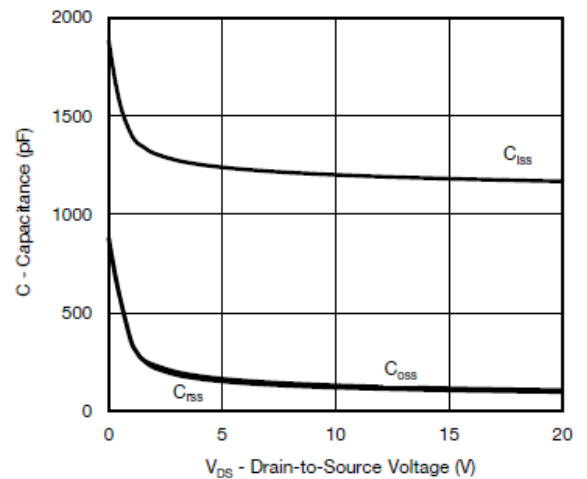
Output Characteristics



Transfer Characteristics



On-Resistance vs. Drain Current

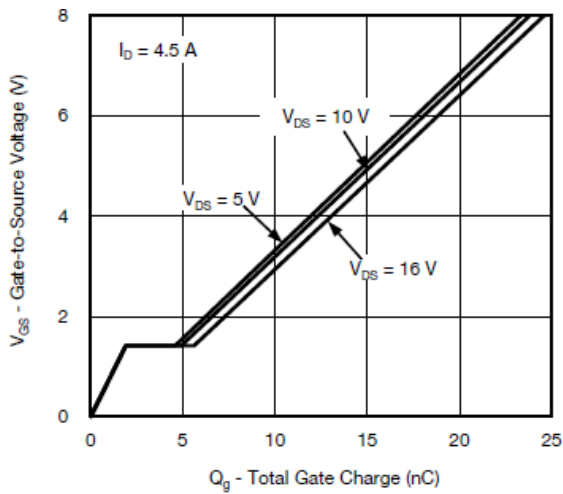


Capacitance

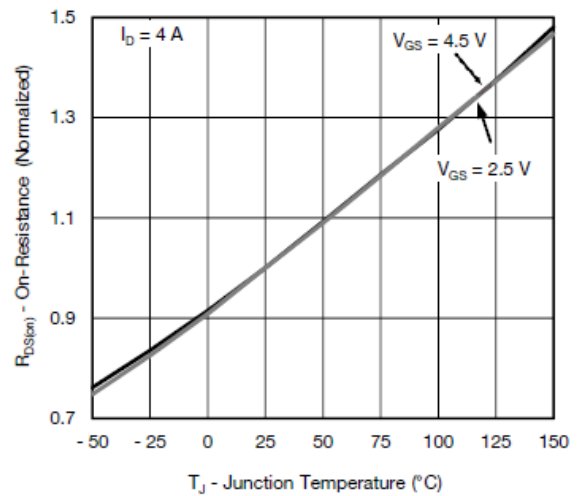


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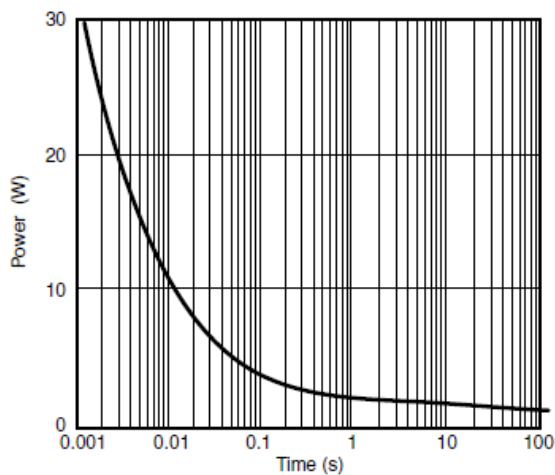
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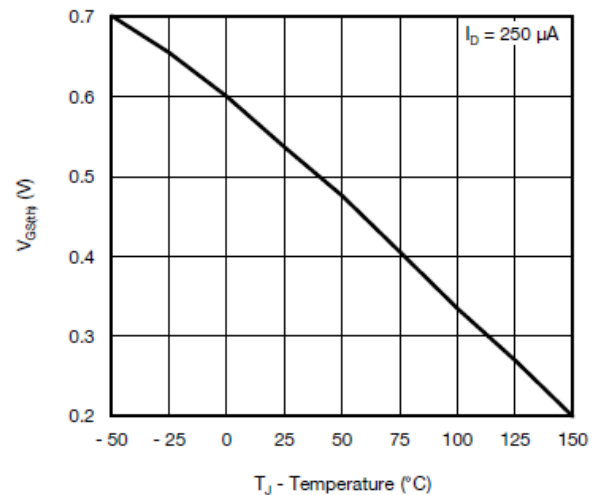
Gate Charge



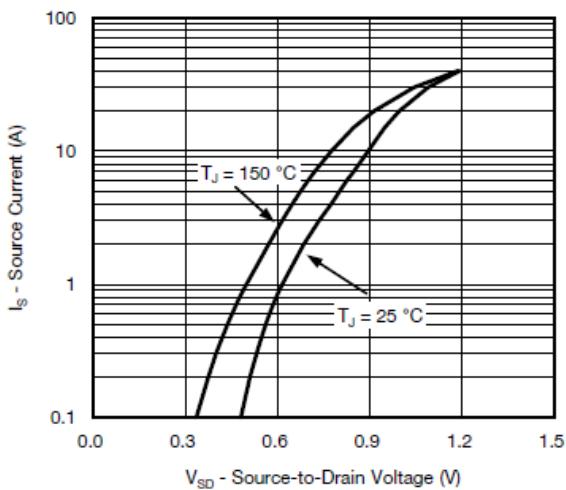
On-Resistance vs. Junction Temperature



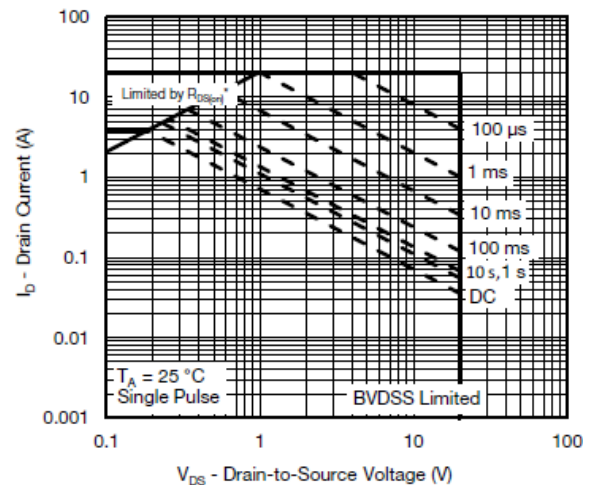
Single Pulse Power, Junction-to-Ambient



Threshold Voltage



Source-Drain Diode Forward Voltage

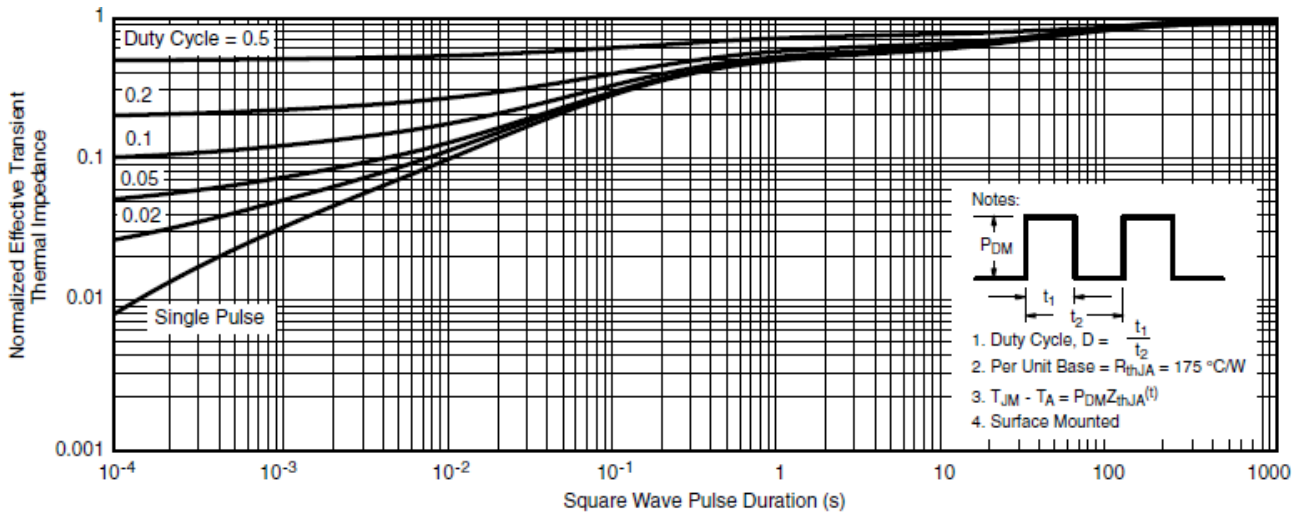


Safe Operating Area, Junction-to-Ambient

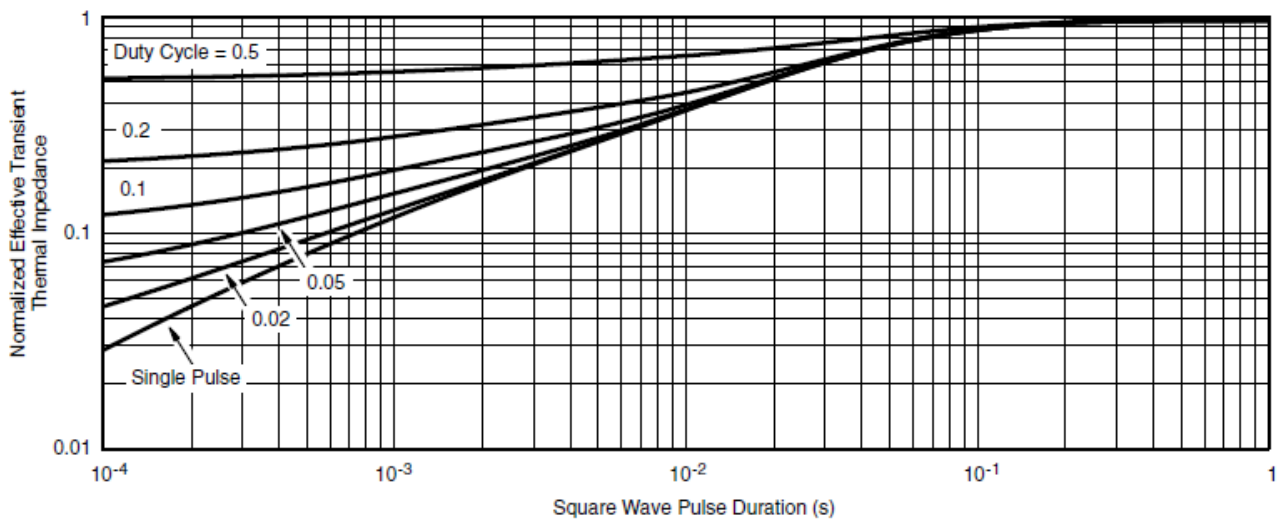


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Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

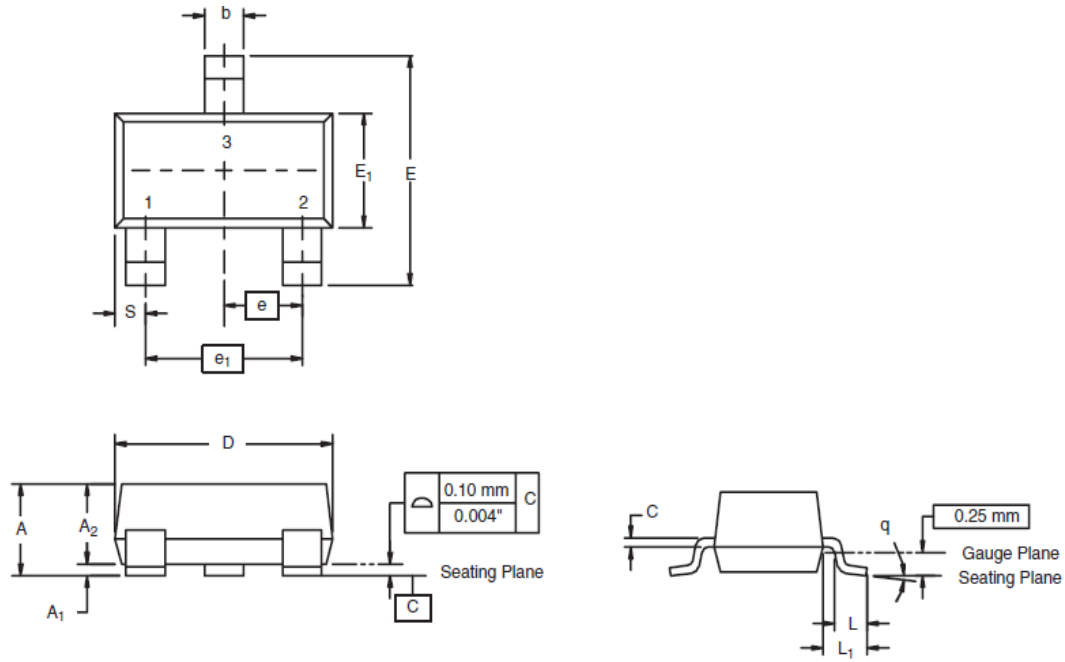


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Packing Information

TSOT-23-3



Dim	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	0.89	1.12	0.035	0.044
A ₁	0.01	0.10	0.0004	0.004
A ₂	0.88	1.02	0.0346	0.040
b	0.35	0.50	0.014	0.020
c	0.085	0.18	0.003	0.007
D	2.80	3.04	0.110	0.120
E	2.10	2.64	0.083	0.104
E ₁	1.20	1.40	0.047	0.055
e	0.95 BSC		0.0374 Ref	
e ₁	1.90 BSC		0.0748 Ref	
L	0.40	0.60	0.016	0.024
L ₁	0.64 Ref		0.025 Ref	
S	0.50 Ref		0.020 Ref	
q	3°	8°	3°	8°



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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 used 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.