



ACE14419T

P-Channel Enhancement Mode Power MOSFET

Description

The ACE14419T uses advanced trench technology to provide excellent R_{DS} , low gate charge and operation with gate voltages as low as 4.5V.

RoHS Compliant

Halogen Free

Features

- $V_{DS} (V) = -30V, I_D = -9.1A$
- $R_{DS(ON)} < 20m\Omega @ V_{GS} = -10V$
- $R_{DS(ON)} < 30m\Omega @ V_{GS} = -4.5V$
- SOP-8 Package

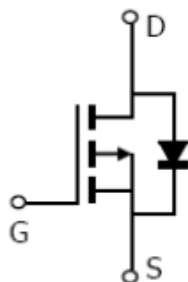
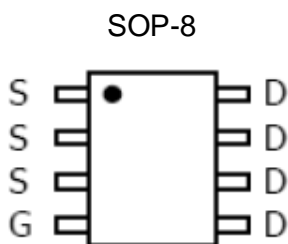
Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current (Continuous)	I_D	$T_A = 25^\circ C$	-9.1
		$T_A = 70^\circ C$	-7.5
Drain Current (Pulse)	I_{DM}	-50	A
Power Dissipation	P_D	3.1	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ C$

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-case	R_{thj-c}	24	$^\circ C/W$
Thermal Resistance Junction-ambient	R_{thj-a}	48	$^\circ C/W$

Packaging Type



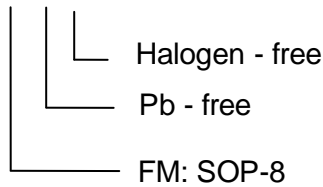


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Ordering information

ACE14419T XX + H



Electrical Characteristics

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$			-1	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-1	-1.5	-3	V
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-9.1A$			20	m Ω
		$V_{GS}=-4.5V, I_D=-6.9A$			30	
Forward Trans Conductance	g_{FS}	$V_{GS}=-15V, I_D=-9A$	10			S
Diode Forward Voltage	V_{SD}	$I_{SD}=-2.5A, V_{GS}=0V$			-1.2	V
Reverse Recovery Time	t_{rr}	$I_S = -7A, V_{GS}=0V,$ $di/dt=100A/\mu s$		26		ns
Reverse Recovery Charge	Q_{rr}			17		nC
Switching						
Total Gate Charge	Q_g	$V_{GS}=-10V, V_{DS}=-15V,$ $I_D=-7A,$		17		nC
Gate-Source Charge	Q_{gs}			5.3		
Gate-Drain Charge	Q_{gd}			7.9		
Turn-On Delay Time	$T_{d(on)}$	$V_{GS}=-10V, V_{DD}=-15V,$ $I_D=-1A, R_{GEN}=3.3\Omega$		8.5		ns
Turn-On Rise Time	t_f			7.5		
Turn-Off Delay Time	$t_{d(off)}$			42		
Turn-Off Fall Time	t_f			28		
Dynamic						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=-15V,$ $f=1MHz$		1530		pF
Output Capacitance	C_{oss}			313		
Reverse Transfer Capacitance	C_{rss}			281		

Pulse Test: Pulse Width $\leq \mu 300s$, Duty Cycle $\leq 2.0\%$



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Typical Performance Characteristics

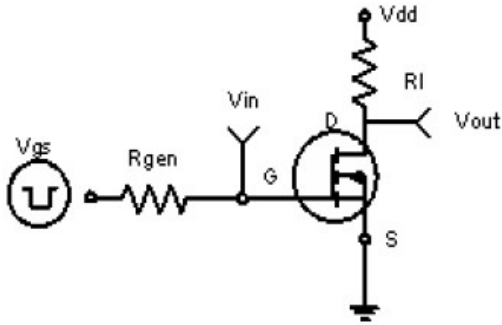


Figure 1: Switching Test Circuit

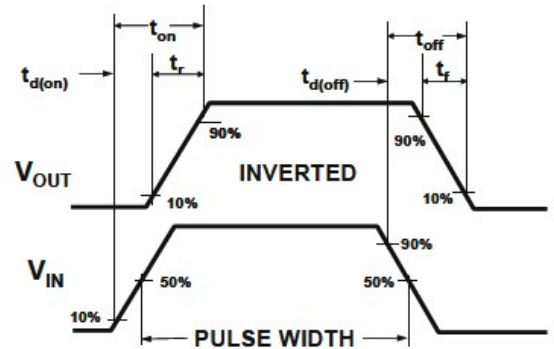


Figure 2: Switching Waveforms

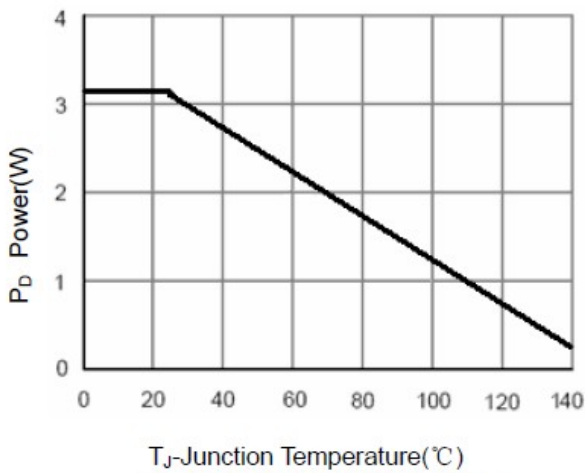


Figure 3 Power Dissipation

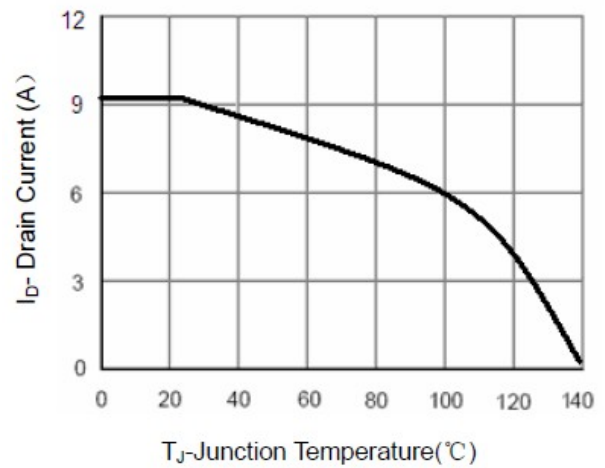


Figure 4 Drain Current

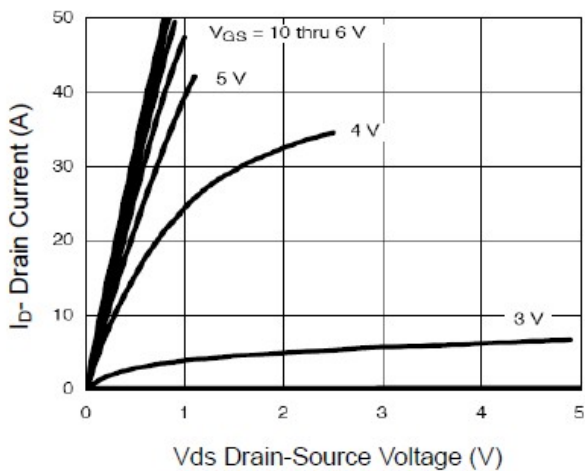


Figure 5 Output Characteristics

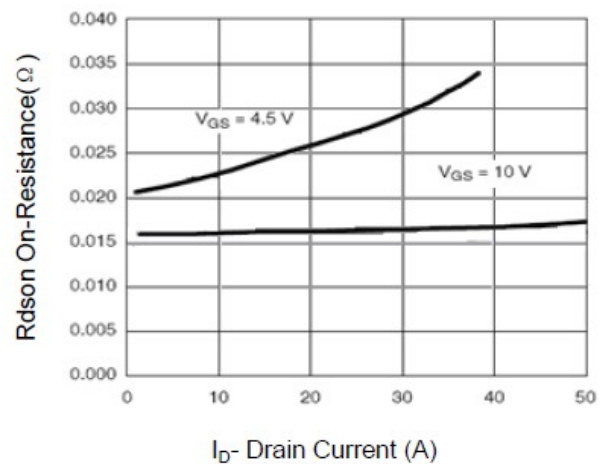


Figure 6 Drain-Source On-Resistance



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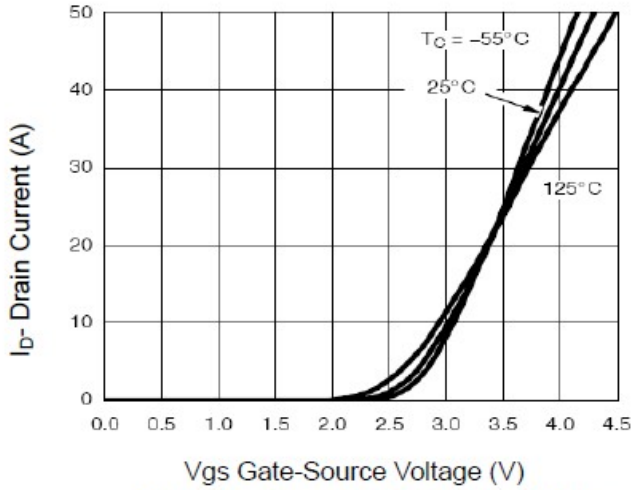


Figure 7 Transfer Characteristics

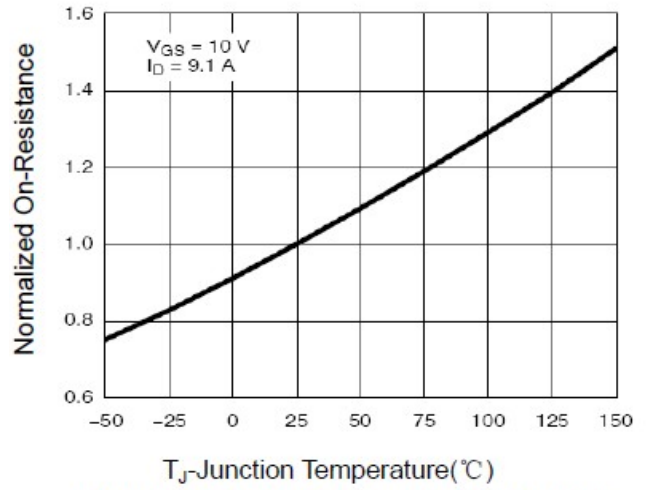


Figure 8 Drain-Source On-Resistance

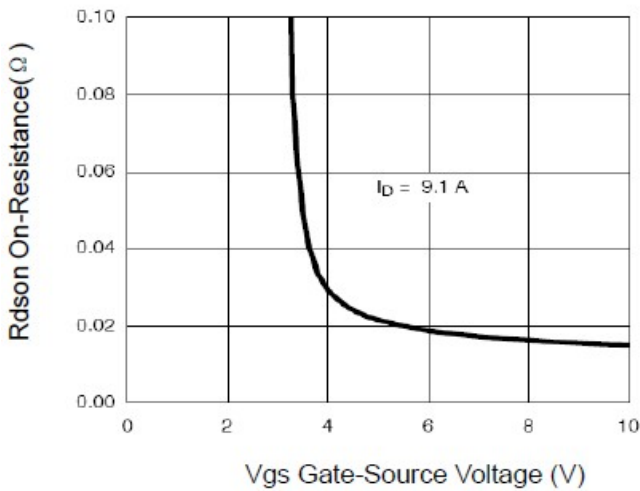


Figure 9 Rdson vs Vgs

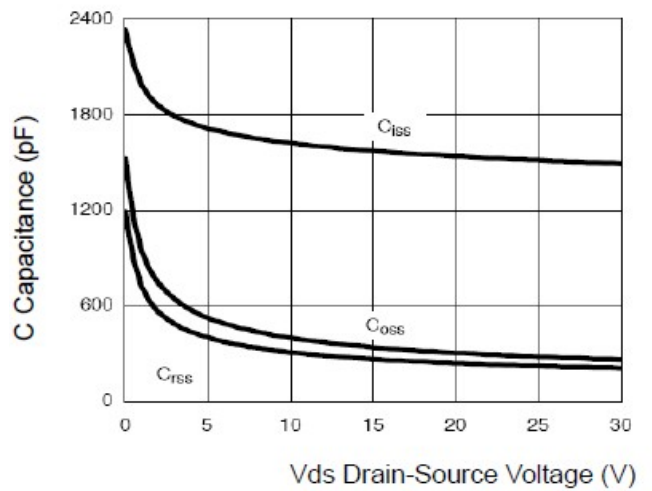


Figure 10 Capacitance vs Vds

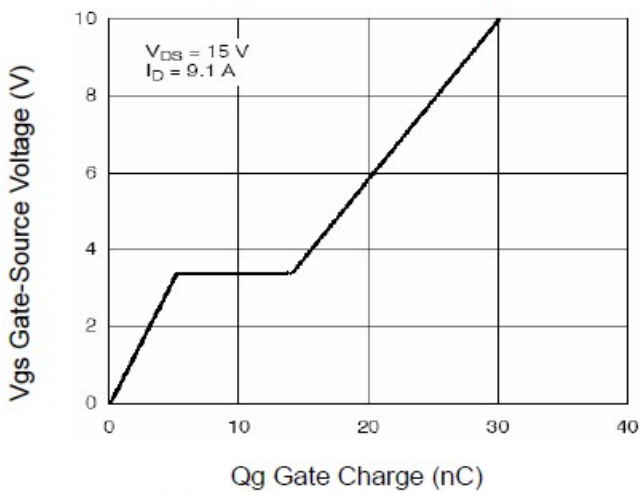


Figure 11 Gate Charge

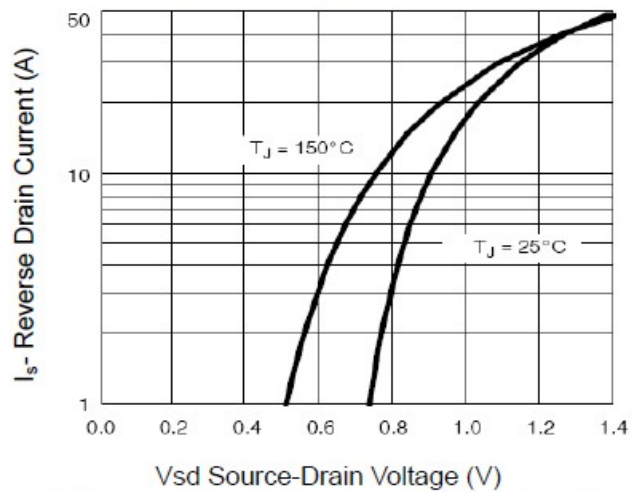


Figure 12 Source- Drain Diode Forward



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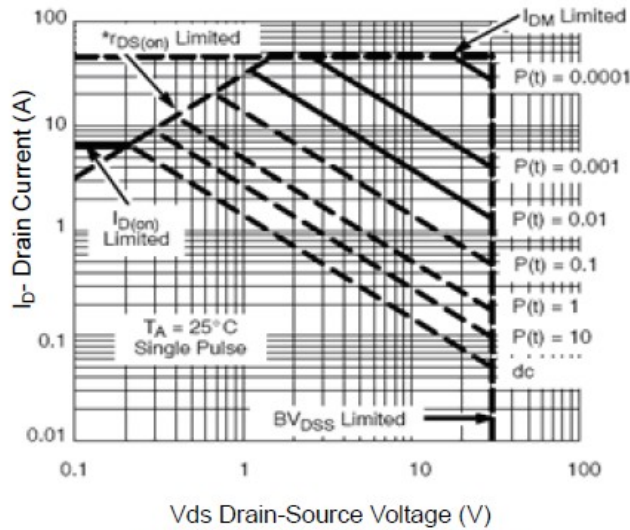


Figure 13 Safe Operation Area

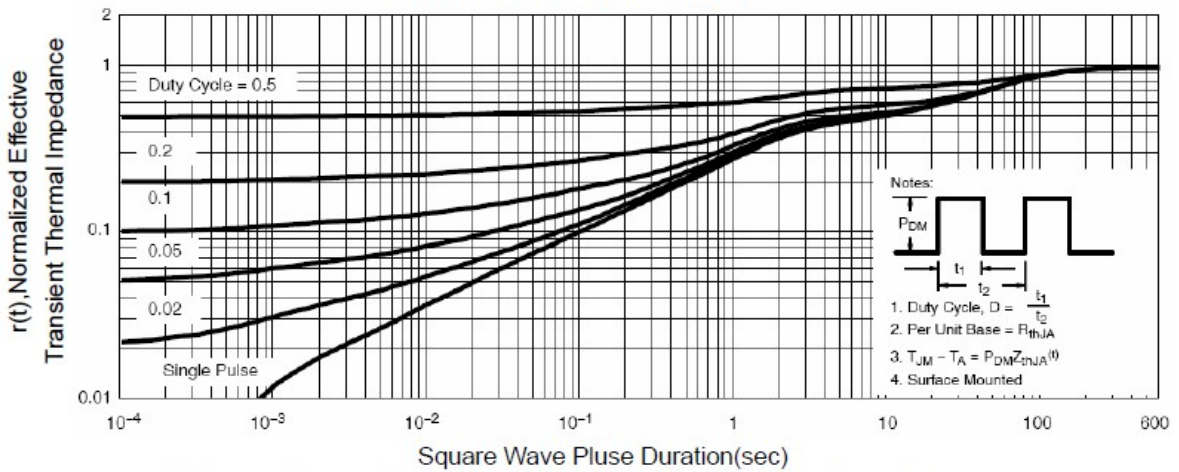


Figure 14 Normalized Maximum Transient Thermal Impedance

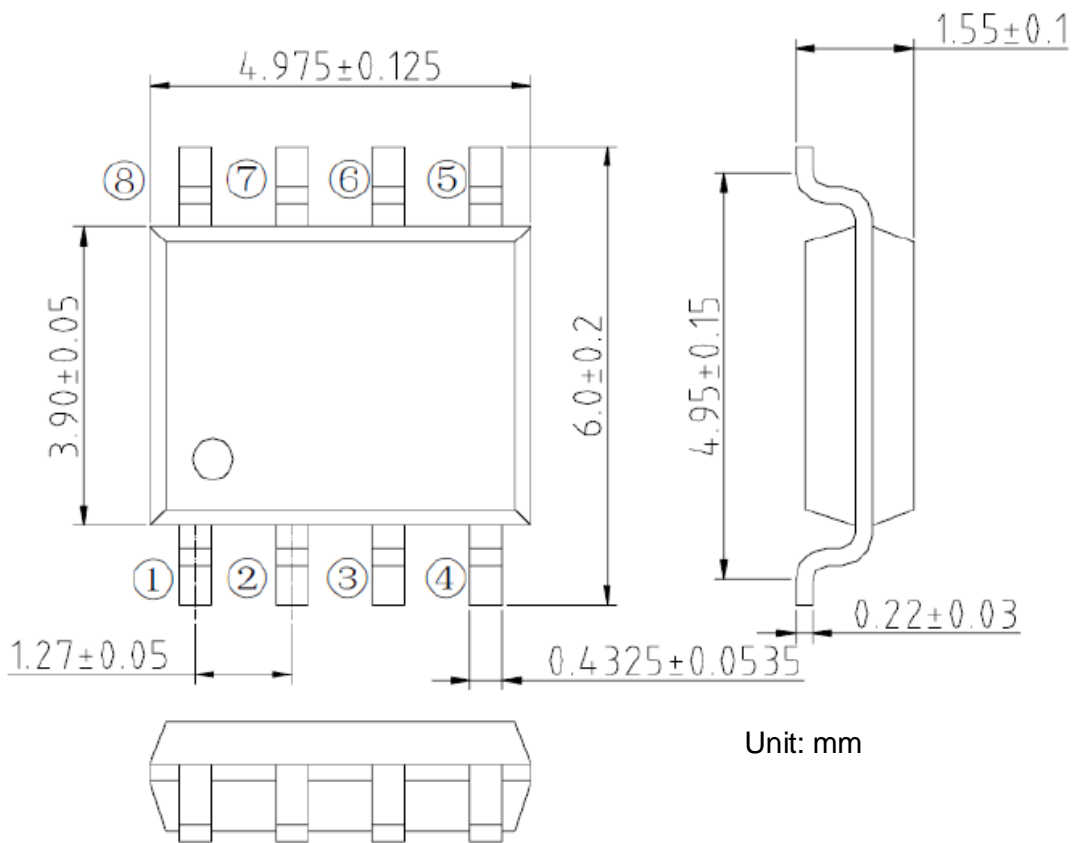


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Packing Information

SOP-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 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.