ACE3926E

Dual N-Channel 20-V MOSFET

Description

The ACE3926E utilize a high cell density trench process to provide low r_{DS}(on) and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

Features

- Low r_{DS}(on) trench technology
- Low thermal impedance
- Fast switching speed

Applications

- Power Routing
- Li Ion Battery Packs
- Level Shifting and Driver Circuits

Absolute Maximum Ratings

Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current [a]	T_A=25℃	I_D	13	A
	T_A=70℃		10	
Pulsed Drain Current [b]		I_{DM}	50	A
Continuous Source Current (Diode Conduction) [a]		I_S	7	A
Power Dissipation [a]	T_A=25℃	P_D	2.5	W
	T_A=70℃		1.5	
Operating temperature / storage temperature		T_J/T_{STG}	-55~150	℃

THERMAL RESISTANCE RATINGS				
Parameter		Symbol	Maximum	Units
Maximum Junction-to-Ambient [a]	t <= 10 sec	$R_{\theta JA}$	83	°C/W
	Steady State		120	

Notes

a. Surface Mounted on 1" x 1" FR4 Board.

b. Pulse width limited by maximum junction temperature

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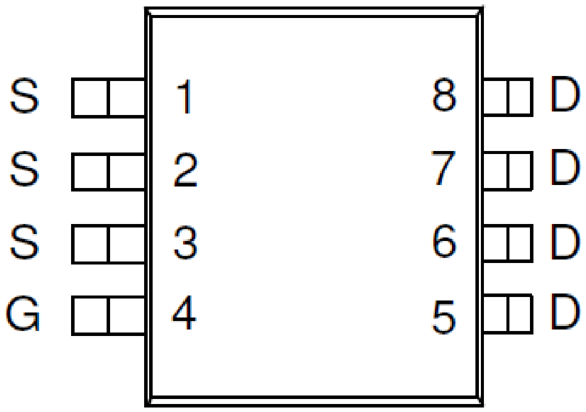
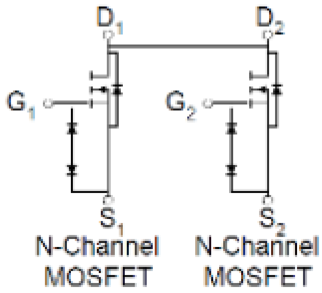
Packaging Type
DFN3*3-8L





Ordering information

ACE3926E NN + H

- Halogen - free
- Pb - free
- NN : DFN3*3-8L

Electrical Characteristics

T_A=25℃, unless otherwise specified.

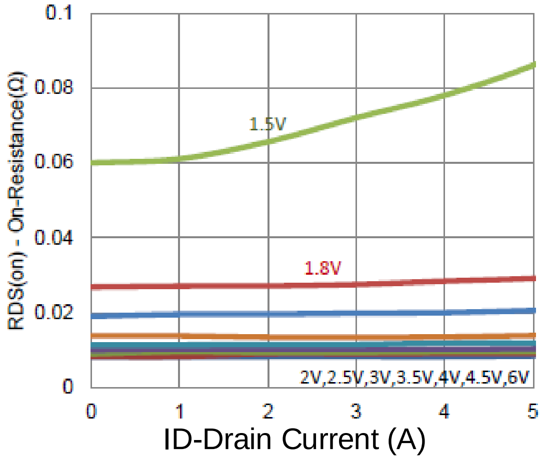
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250 uA	0.4			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±12 V			±10	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 16 V, V_{GS} = 0 V			1	uA
		V_{DS} = 16V, V_{GS} = 0 V, T_J = 55℃			10	
On-State Drain Current[A]	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 4.5 V	20			A
Drain-Source On-Resistance[A]	$R_{DS(ON)}$	V_{GS} = 4.5 V I_D = 2 A			10	mΩ
		V_{GS} = 2.5 V, I_D =1.6 A			14	
Forward Transconductance[A]	g_{FS}	V_{DS} =15 V, I_D = 2 A		3		S
Diode Forward Voltage	V_{SD}	I_S = 3.5 A, V_{GS} = 0 V		0.8		V
Dynamic [b]						
Total Gate Charge	Q_g	V_{DS} = 10V, V_{GS} = 4.5 V, I_D = 2 A		15		nC
Gate-Source Charge	Q_{gs}			1.9		
Gate-Drain Charge	Q_{gd}			3.7		
Turn-On Delay Time	$t_{d(on)}$	V_{DS} = 10 V, R_L = 5 Ω, I_D = 2 A, V_{GEN} = 4.5 V , R_{GEN} = 6 Ω,		178		ns
Rise Time	t_r			332		
Turn-Off Delay Time	$t_{d(off)}$			1939		
Fall Time	t_f			902		
Input Capacitance	C_{iss}	V_{DS} = 15 V, V_{GS} = 0 V, f = 1 Mhz		1225		pF
Output Capacitance	C_{oss}			151		
Reverse Transfer Capacitance	C_{rss}			123		

Note :

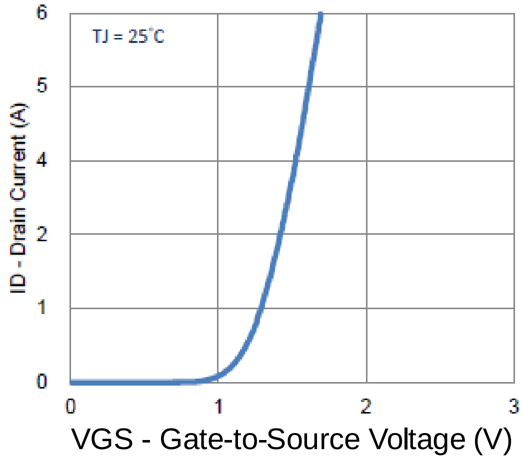
a. Pulse test: PW <= 300us duty cycle <= 2%.

b. Guaranteed by design, not subject to production testing

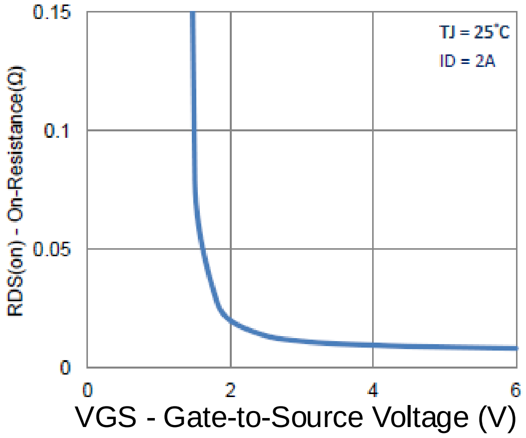
Typical Performance Characteristics



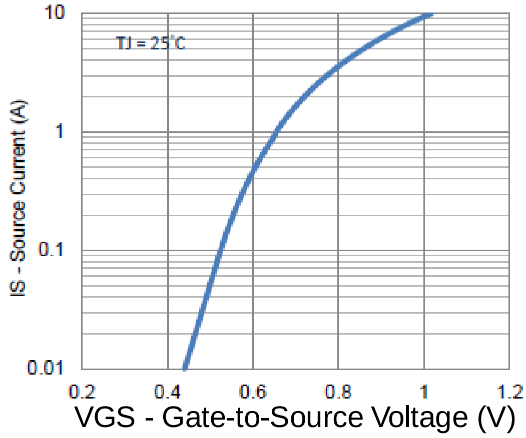
1.On-Resistance vs. Drain Current



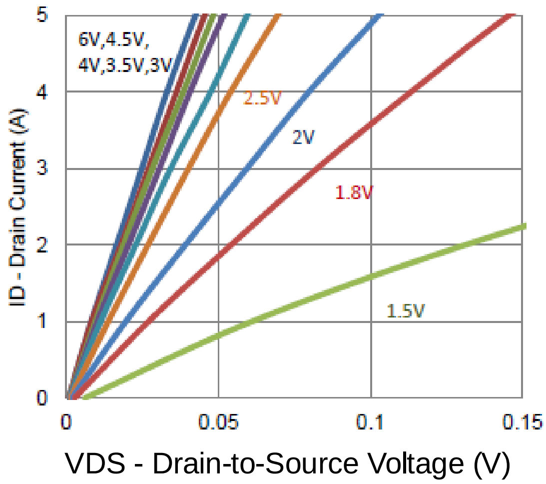
2. Transfer Characteristics



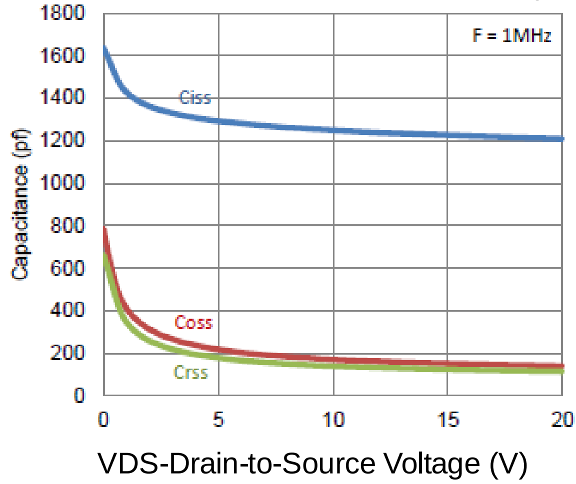
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

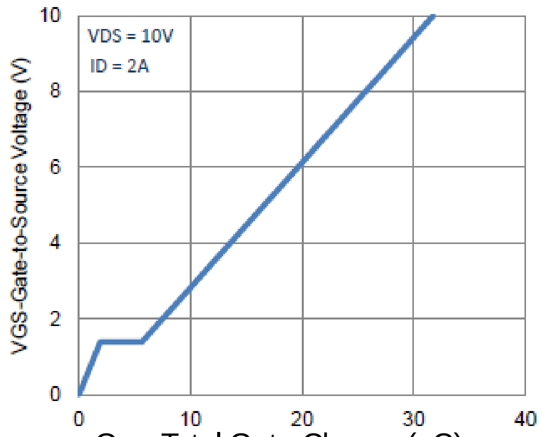


5. Output Characteristics

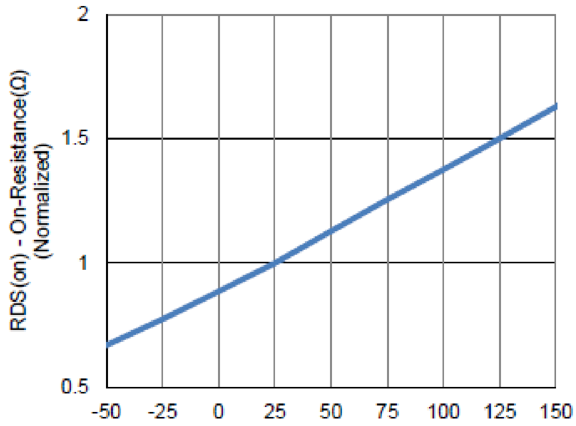


6. Capacitance

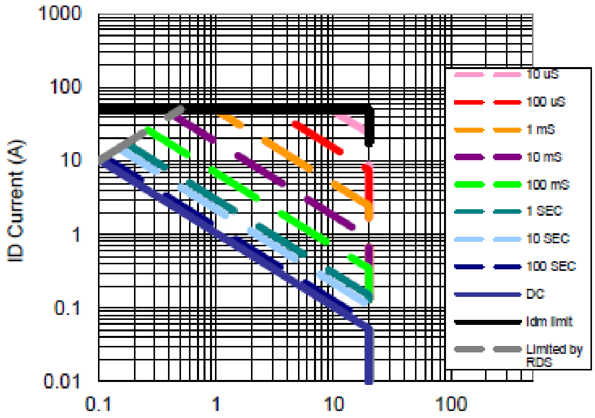
Typical Performance Characteristics



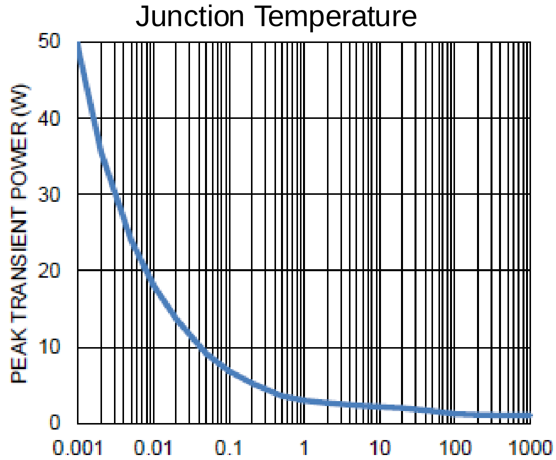
Qg - Total Gate Charge (nC)
7. Gate Charge



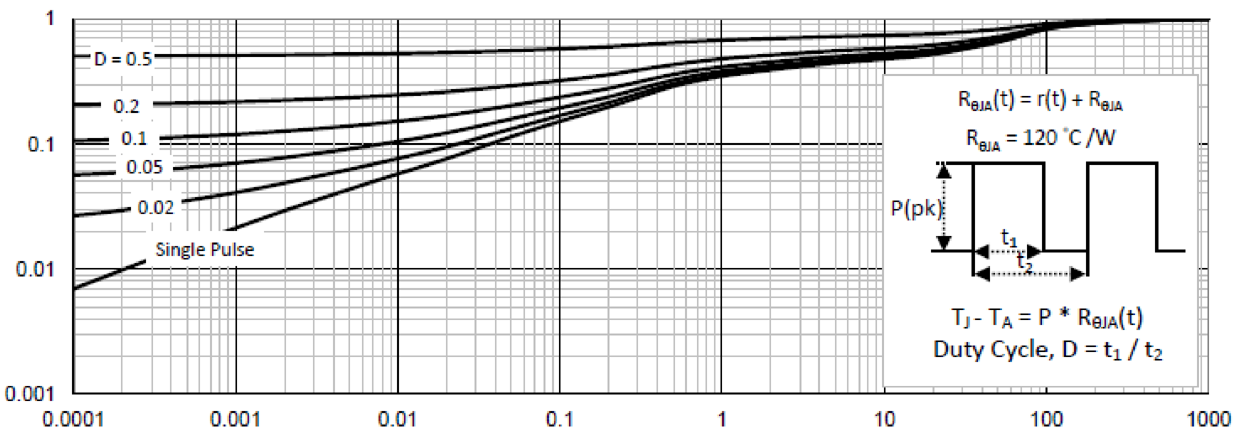
V_{DS} (V)
8. Normalized On-Resistance Vs Junction Temperature



VDS Drain to Source Voltage (V)
9. Safe Operating Area



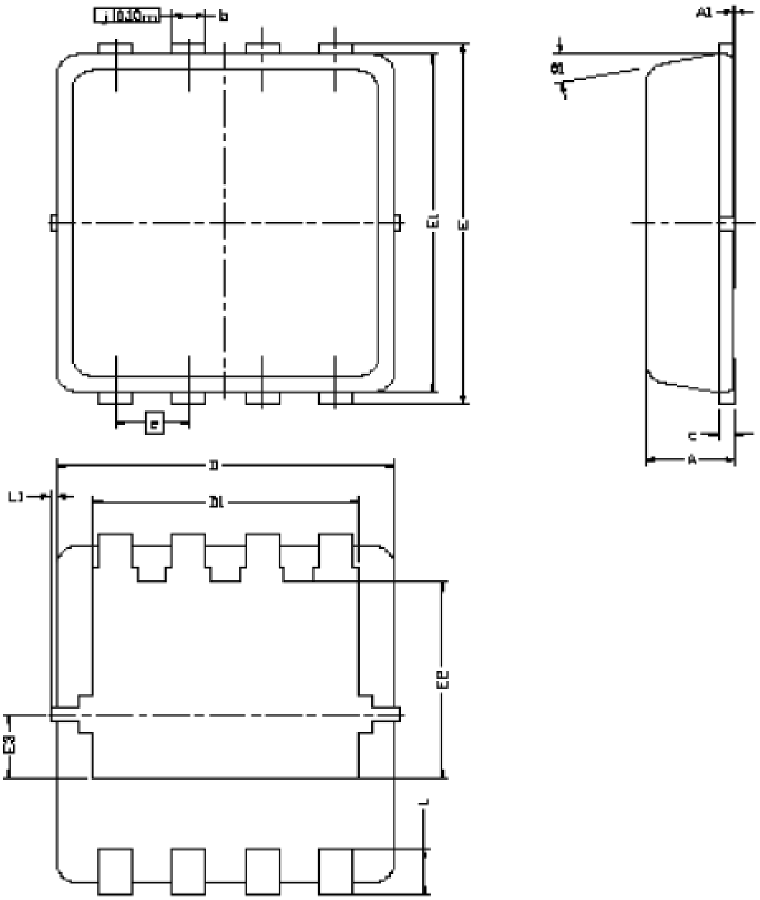
t1 TIME (sec)
10.Single Pulse Maximum Power Dissipation



t1 TIME (sec)
11. Normalized Thermal Transient Junction to Ambient

Packing Information

DFN3*3-8L



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.700	0.80	0.900	0.0276	0.0315	0.0354
A1	0.00		0.05	0.000		0.002
b	0.24	0.30	0.35	0.009	0.012	0.014
c	0.08	0.152	0.25	0.003	0.006	0.010
D	2.90BSC			0.114BSC		
E	2.80BSC			0.110BSC		
E1	2.30BSC			0.091BSC		
e	0.65BSC			0.026BSC		
L	0.20	0.375	0.450	0.008	0.0148	0.0177
L1	0		0.100	0		0.004
Θ1	0	10	12	0	10	12

Unit: mm

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 shoes 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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