Description

This 20V 6.5A Dual N-Channel Power Trench MOSFET in a SOP-8 Plastic Package.

Applications

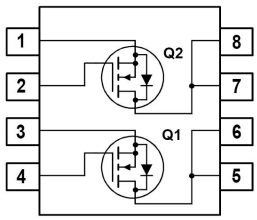
- Battery protection,
- Load Switch
- Power management.

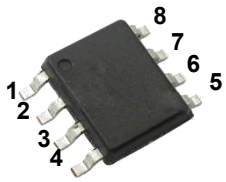
Features

- Optimized for use in battery protection circuits
- ±10 V_{GSS} allows for wide operating voltage range
- Low gate charge. Built-in dual MOSFET.
- Halogen-free Product.

V_{DSS}	$R_{DS(on)}$ Typ	I_D
20V	19mΩ	6.5A

Equivalent Circuit & Pinning





PIN1：S2　PIN 2：G2　PIN 3：S1　PIN 4：G1
PIN 5：D1　PIN 6：D1　PIN 7：D2　PIN 8：D2

Absolute Maximum Ratings(Ta=25℃)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GS}	±10	V
Drain Current– Continuous(note 1a)	I_D	6.5	A
Drain Current–Pulsed		20	A
Power Dissipation for Dual Operation	P_D	2.0	W
Power Dissipation for Single Operation(note 1a)		1.6	W
Power Dissipation for Dual Operation(note 1b)		1.0	W
Power Dissipation for Single Operation(note 1c)		0.9	W
Thermal Resistance, Junction-to-Ambient (note 1a)	$R_{\theta JA}$	78	℃/ W
Thermal Resistance, Junction-to case(note 1)	$R_{\theta JC}$	40	℃/ W
Operating and Junction Temperature Range	T_j T_{stg}	-55～150	℃

Electrical Characteristics(Ta=25℃)

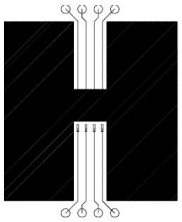
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	20			V
Breakdown Voltage Temperature Coefficient	$\Delta B_{VDSS}/\Delta T_J$	I_D=250μA Referenced to 25℃		14		mV/℃
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=16V V_{GS}=0V			1.0	μA
Gate-Body Leakage Current Forward	I_{GSS}	V_{GS}=±8.0V V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=250μA	0.5	1.0	1.5	V
Gate Threshold Voltage Temperature Coefficient	$\Delta V_{GS(th)}/\Delta T_J$	I_D=250μA Referenced to 25℃		-3.0		mV/℃
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=4.5V I_D=6.5A		19	24	mΩ
		V_{GS}=4.5V I_D=6.5A T_J=125℃		27	34	
		V_{GS}=2.5V I_D=5.4A		23	30	
On-State Drain Current	$I_{D(on)}$	V_{DS}=5.0V V_{GS}=5.0V	15			A
Forward Transconductance	g_{FS}	V_{DS}=5.0V I_D=3.0A		11		S

Electrical Characteristics(Ta=25℃)

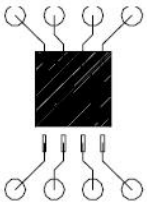
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	C_{iss}	V_{DS}=10V V_{GS}=0V f=1.0MHz		700		pF
Output Capacitance	C_{oss}			175		
Reverse Transfer Capacitance	C_{rss}			85		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=10V I_D=1.0A R_{GEN}=6Ω V_{GS}=4.5V		8	16	ns
Turn-On Rise Time	t_r			10	18	
Turn-Off Delay Time	$t_{d(off)}$			18	29	
Turn-Off Fall Time	t_f			5.0	10	
Total Gate Charge	Q_g	V_{DD}=10V I_D=3.0A V_{GS}=4.5		7.0	10	nC
Gate-Source Charge	Q_{gs}			1.2		
Gate-Drain Charge	Q_{gd}			1.9		
Maximum Continuous Drain-Source Diode Forward Current	I_S				1.3	A
Drain-Source Diode Forward Voltage	V_{SD}	I_S=1.3A V_{GS}=0V (note2)		0.65	1.2	V

Notes:
1. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design while $R_{\theta JA}$ is determined by the user's board design.

a) 78℃/W when mounted on a 0.5 in^2 pad of 2 oz. copper.



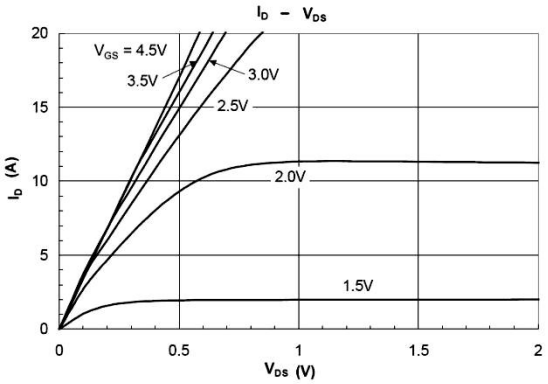
b) 125℃/W when mounted on a 0.02 in^2 pad of 2 oz. copper.

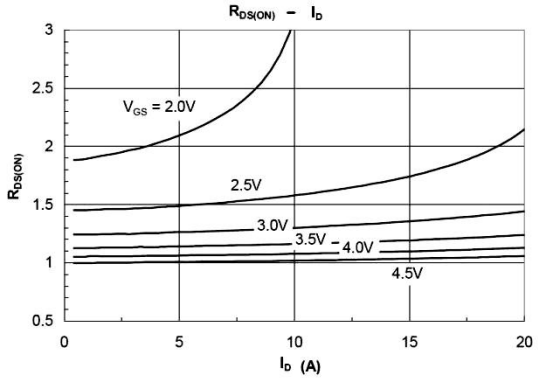


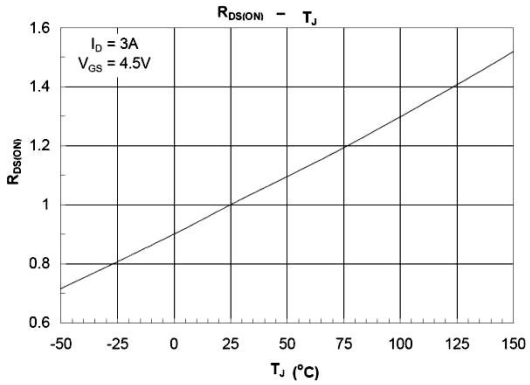
c) 135℃/W when mounted on a minimum pad.

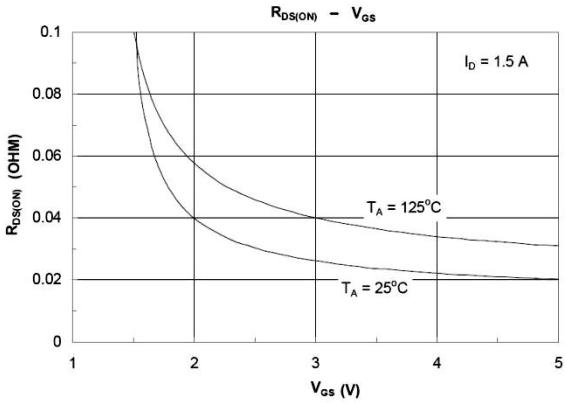
Scale 1 : 1 on letter size paper
2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

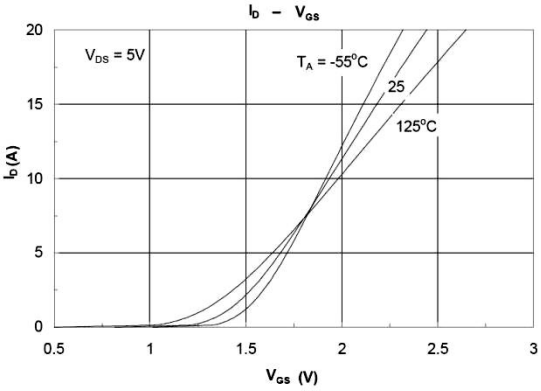
Electrical Characteristic Curve

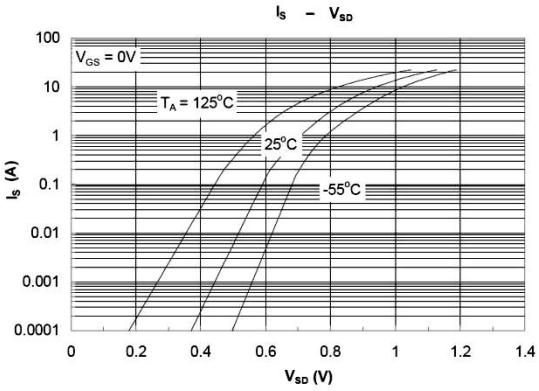












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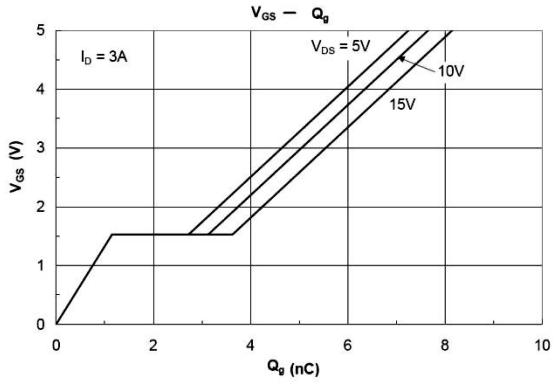
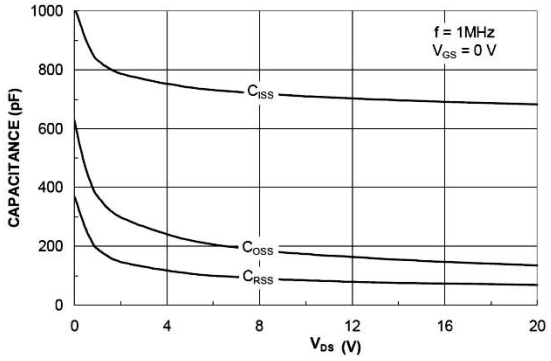
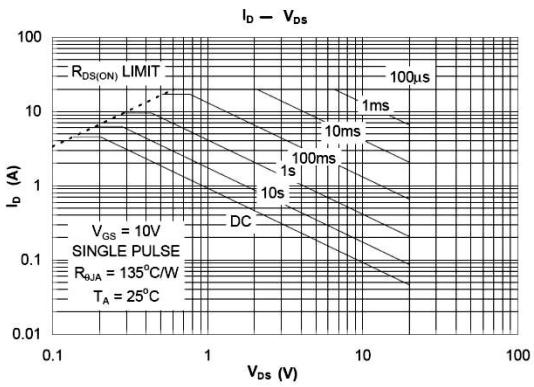
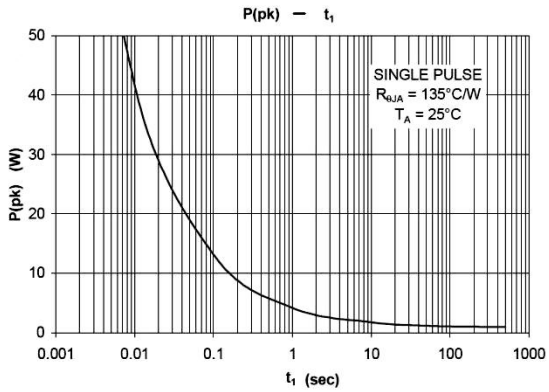
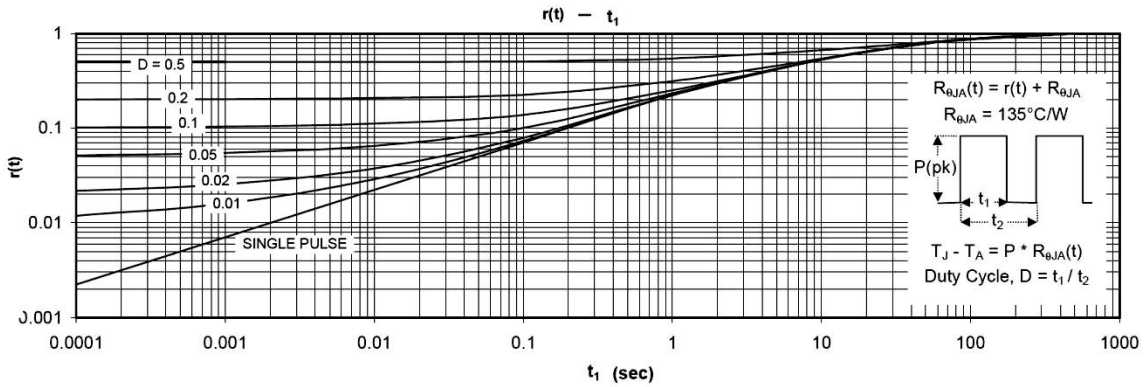


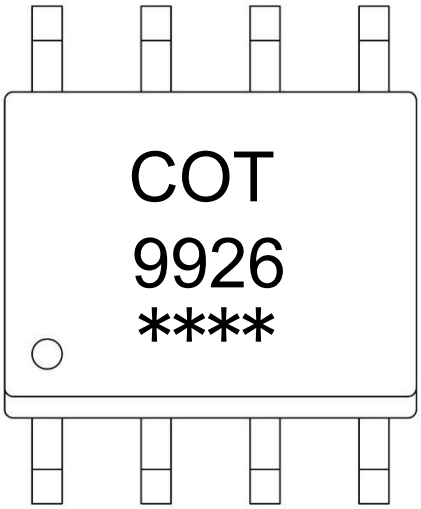








Marking Instructions



Note:

COT: Company Logo

9926: Product Type.

****: Lot No. Code, code change with Lot No.

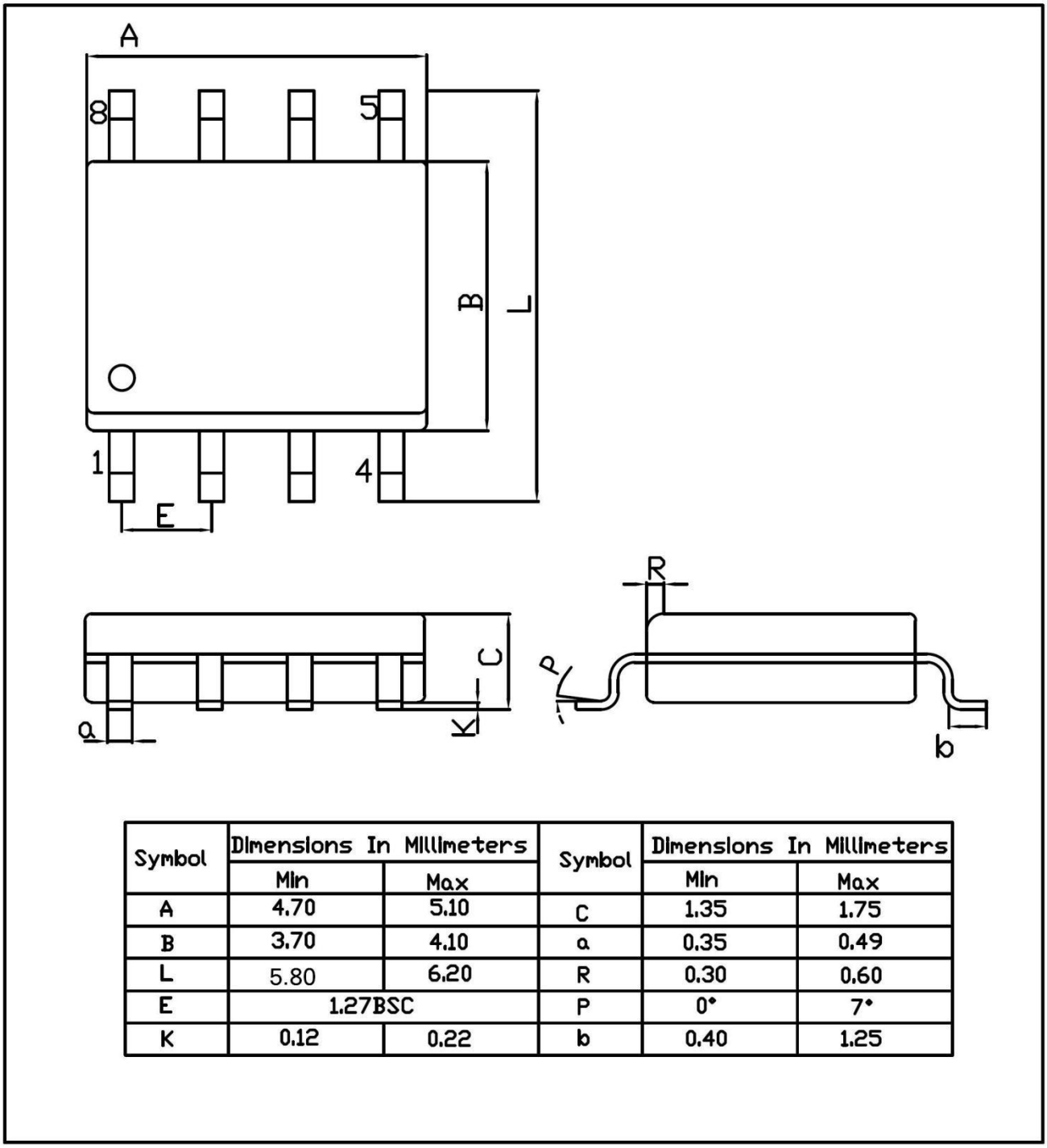
Packaging SPEC.

REEL INFORMATION

Package Type	Units					Dimension (unit：mm³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
SOP-8	4,000	2	8,000	6	48,000	13″ ×12	360×360×50	380×335×366

Package Outline Dimensions

SOP-8 Unit:mm



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.70	5.10	C	1.35	1.75
B	3.70	4.10	a	0.35	0.49
L	5.80	6.20	R	0.30	0.60
E	1.27BSC		P	0°	7°
K	0.12	0.22	b	0.40	1.25