

## Descriptions

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

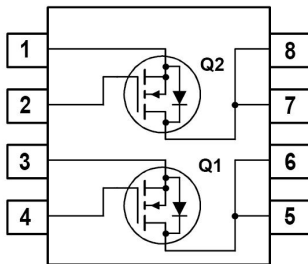
## Features

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

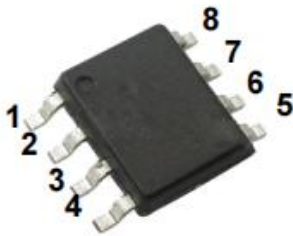
## Applications

- Battery protection,
- Load Switch
- Power management.

## 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°C)**

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

**Electrical Characteristics(Ta=25°C)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V$ $I_D=250\mu A$	20			V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	$I_D=250\mu A$ Referenced to 25°C		14		mV/°C
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=16V$ $V_{GS}=0V$			1.0	$\mu A$
Gate-Body Leakage Current Forward	$I_{GSS}$	$V_{GS}=\pm 8.0V$ $V_{DS}=0V$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	0.5	1.0	1.5	V
Gate Threshold Voltage Temperature Coefficient	$\Delta V_{GS(th)}/\Delta T_J$	$I_D=250\mu A$ Referenced to 25°C		-3.0		mV/°C
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V$ $I_D=6.5A$		19	24	mΩ
		$V_{GS}=4.5V$ $I_D=6.5A$ $T_J=125^\circ C$		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

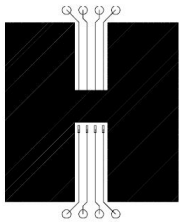
Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	$C_{iss}$	$V_{DS}=10V \quad V_{GS}=0V$ $f=1.0MHz$		700		pF
Output Capacitance	$C_{oss}$			175		
Reverse Transfer Capacitance	$C_{rss}$			85		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V$ $I_D=1.0A$ $R_{GEN}=6\Omega$ $V_{GS}=4.5V$		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	$V_{SD}$	$I_S=1.3A \quad V_{GS}=0V$ (note2)		0.65	1.2	V

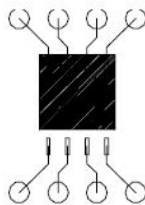
Notes:

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°C/W when mounted on a 0.5 in<sup>2</sup> pad of 2 oz. copper.



b) 125°C/W when mounted on a 0.02 in<sup>2</sup> pad of 2 oz. copper.



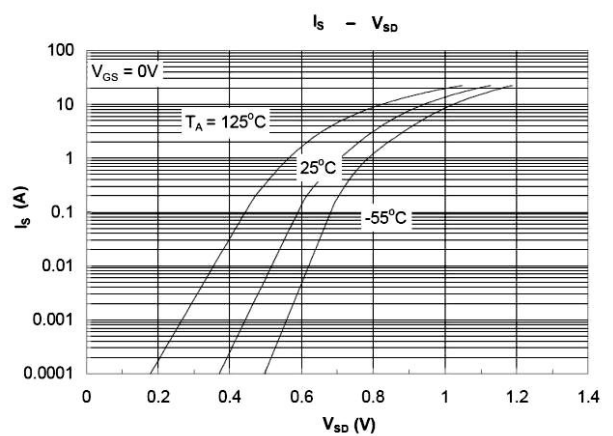
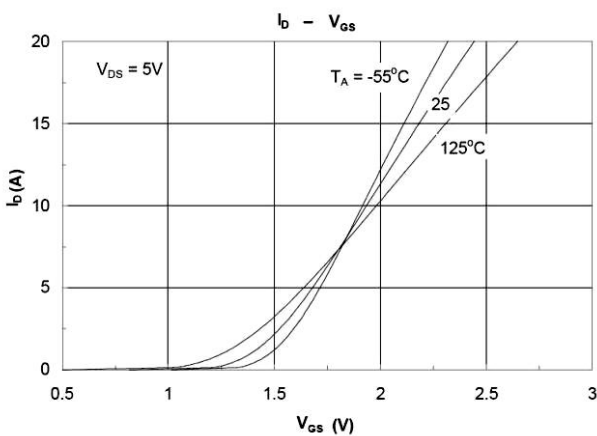
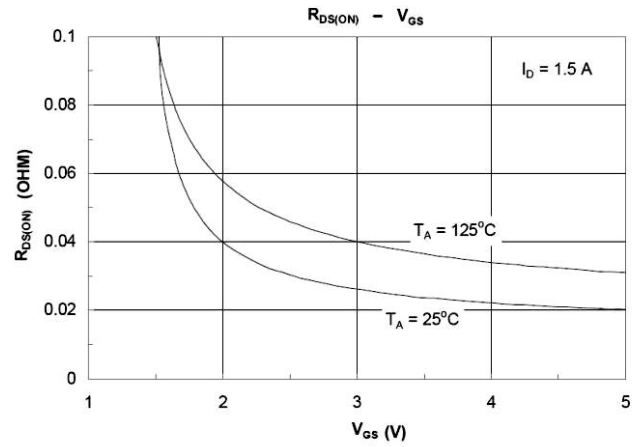
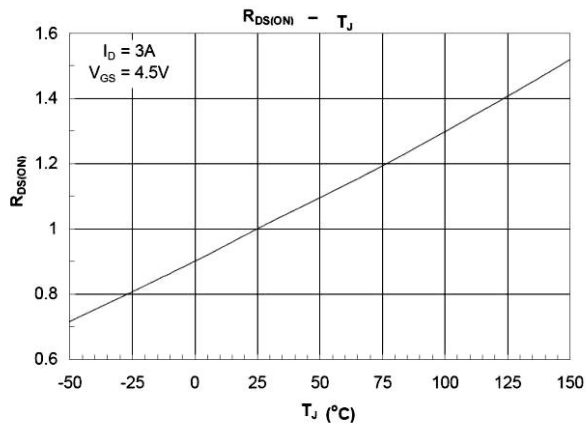
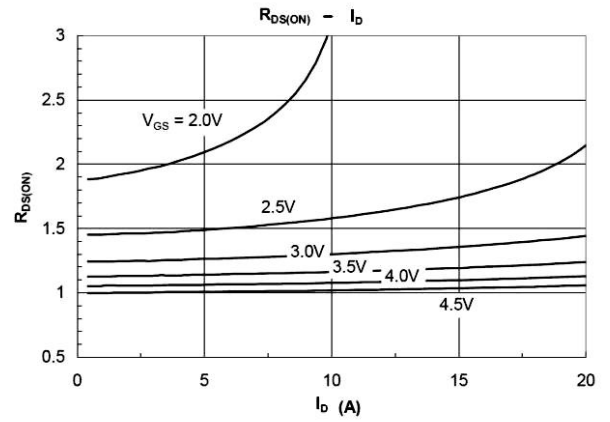
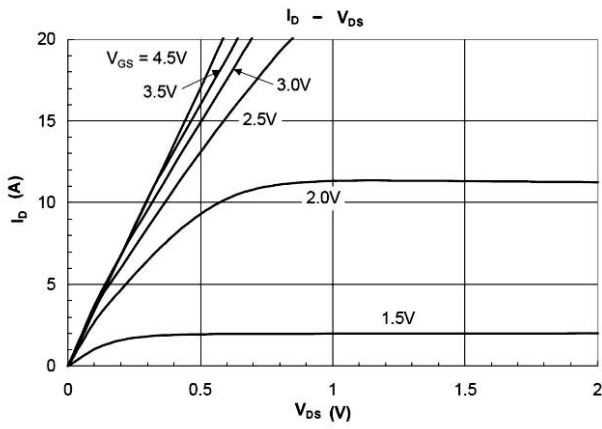
c) 135°C/W when mounted on a minimum pad.



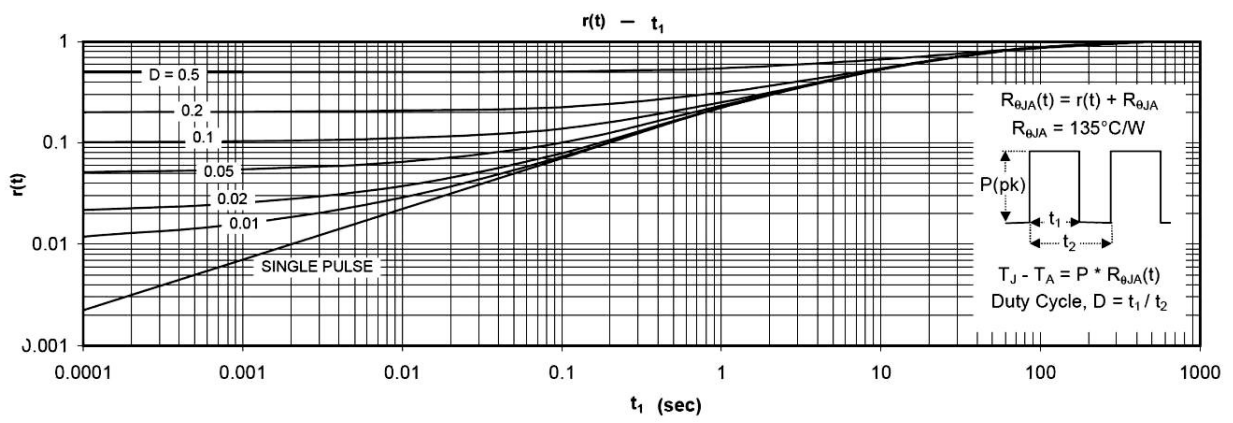
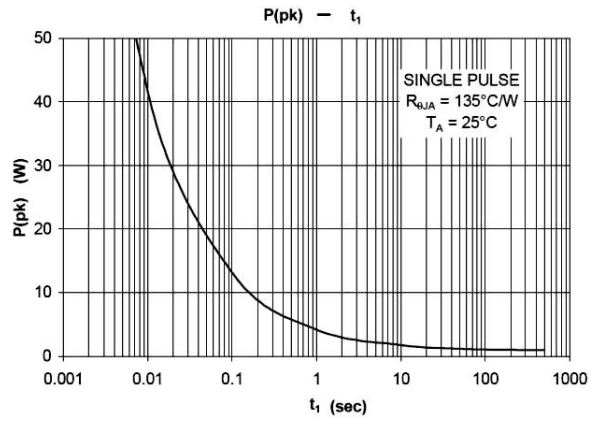
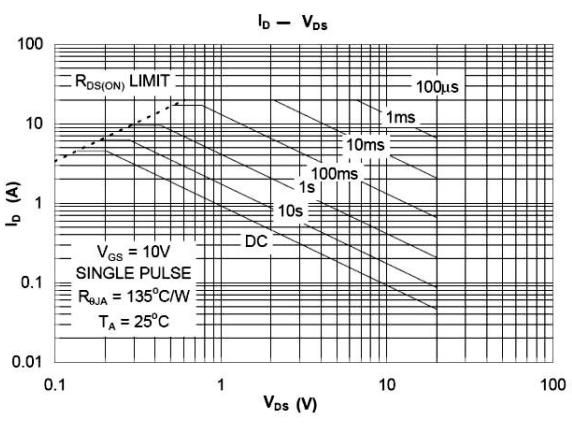
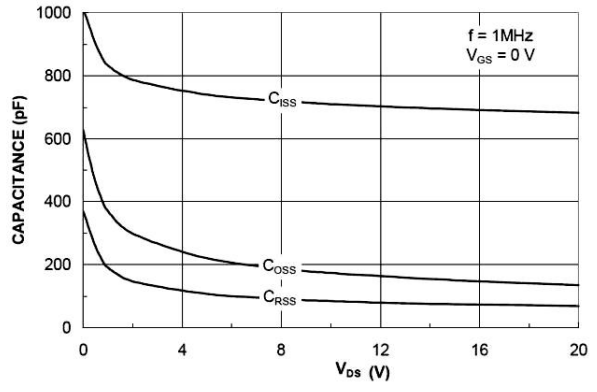
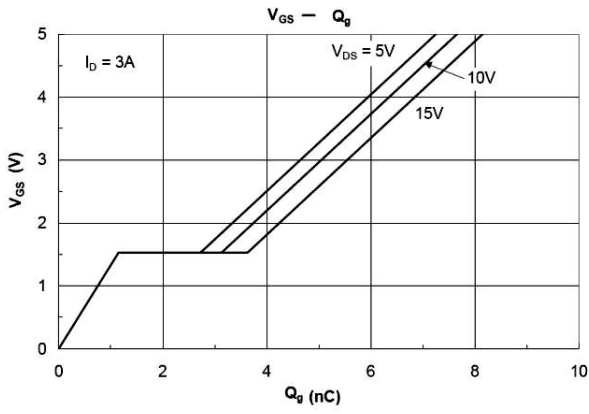
Scale 1 : 1 on letter size paper

2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

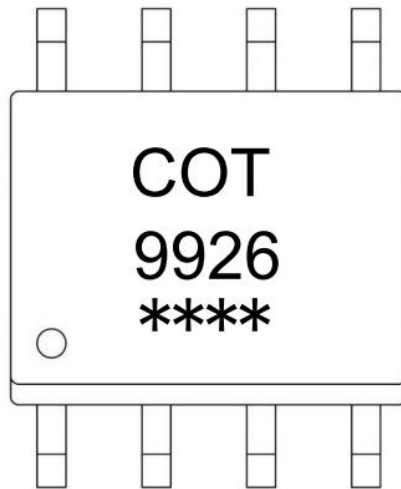
Electrical Characteristic Curve



Electrical Characteristic Curve



## 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: mm <sup>3</sup> )		
	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

