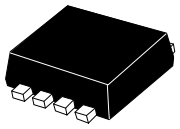
MOSFET – Power, Single, P-Channel

-30 V, 25 mΩ, -7,5 A

ECH8315

V_{DSS}	$R_{DS(on)}$ Max	I_D Max
−30 V	25 mΩ @ −10 V	−7.5 A
	44 mΩ @ −4.5 V	
	49 mΩ @ −4 V	



SOT−28FL/ECH8
CASE 318BF

Description

This Power MOSFET is produced using **onsemi**'s trench technology, which is specifically designed to low on resistance. This devices is suitable for applications with low on resistance requirements.

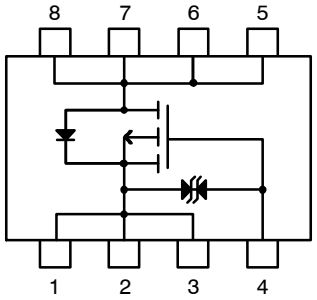
Features

- Low On−Resistance
- 4 V Drive
- ESD Diode−Protected Gate
- Pb−Free, Halogen Free and RoHS Compliant

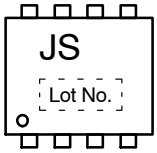
Typical Applications

- Load Switch
- Protection Switch for Lithium−ion Battery
- Motor Driver

ELECTRICAL CONNECTION
P−Channel



MARKING DIAGRAM



ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Value	Unit
Drain to Source Voltage	V_{DSS}	−30	V
Gate to Source Voltage	V_{GSS}	±20	V
Drain Current (DC)	I_D	−7.5	A
Drain Current (Pulse) PW ≤ 10 μs, duty cycle ≤ 1%	I_{DP}	−40	A
Power Dissipation When mounted on ceramic substrate (900 mm^2 x 0.8 mm)	P_D	1.5	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

Parameter	Symbol	Value	Unit
Junction to Ambient When mounted on ceramic substrate (900 mm^2 x 0.8 mm)	$R_{\theta JA}$	83.3	°C/W

ORDERING INFORMATION

See detailed ordering and shipping information on page 5 of this data sheet.

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = −1 mA, V_{GS} = 0 V	−30	–	–	V
Zero−Gate Voltage Drain Current	I_{DSS}	V_{DS} = −30 V, V_{GS} = 0 V	–	–	−1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS} = ±16 V, V_{DS} = 0 V	–	–	±10	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = −10 V, I_D = −1 mA	−1.2	–	−2.6	V
Forward Transconductance	g_{FS}	V_{DS} = −10 V, I_D = −3.5 A	5	8.4	–	S
Static Drain to Source On−State Resistance	$R_{DS(on)}$	I_D = −3.5 A, V_{GS} = −10 V	–	19	25	mΩ
		I_D = −2 A, V_{GS} = −4.5 V	–	31	44	mΩ
		I_D = −2 A, V_{GS} = −4 V	–	35	49	mΩ
Input Capacitance	C_{iss}	V_{DS} = −10 V, f = 1 MHz	–	875	–	pF
Output Capacitance	C_{oss}		–	200	–	
Reverse Transfer Capacitance	C_{rss}		–	150	–	
Turn−ON Delay Time	$t_{d(on)}$	See Figure 1	–	8.1	–	ns
Rise Time	t_r		–	33	–	ns
Turn−OFF Delay Time	$t_{d(off)}$		–	92	–	ns
Fall Time	t_f		–	60	–	ns
Total Gate Charge	Qg		–	18	–	nC
Gate to Source Charge	Qgs	V_{DS} = −15 V, V_{GS} = −10 V, I_D = −7.5 A	–	2.1	–	nC
Gate to Drain “Miller” Charge	Qgd		–	4.7	–	nC
Forward Diode Voltage	V_{SD}	I_S = −7.5 A, V_{GS} = 0 V	–	−0.82	−1.2	V

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

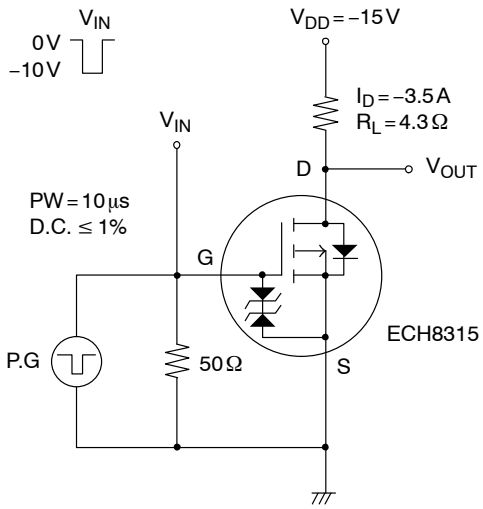


Figure 1. Switching Time Test Circuit 1

TYPICAL CHARACTERISTICS

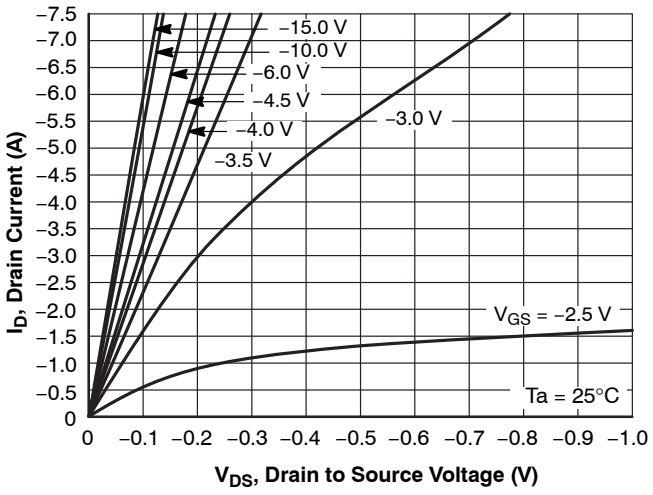


Figure 2. $I_D - V_{DS}$

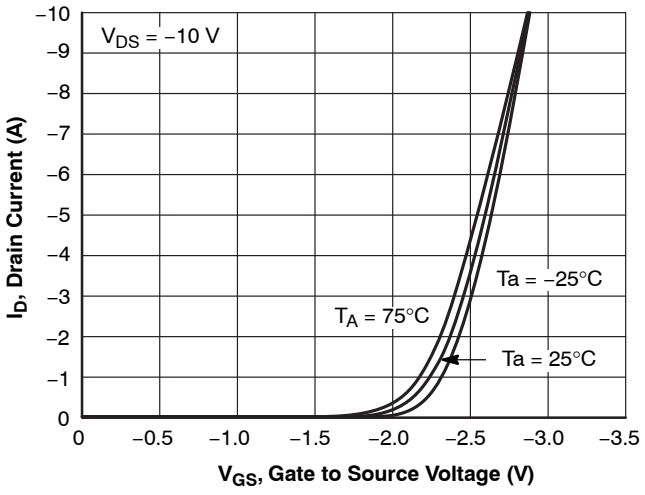


Figure 3. $I_D - V_{GS}$

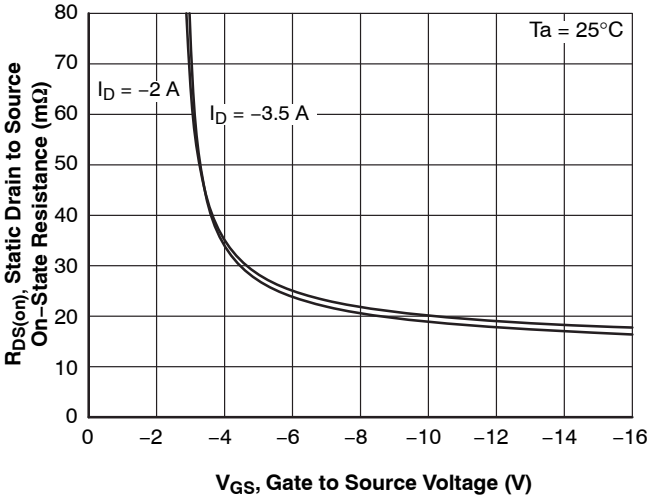


Figure 4. $R_{DS(on)} - V_{GS}$

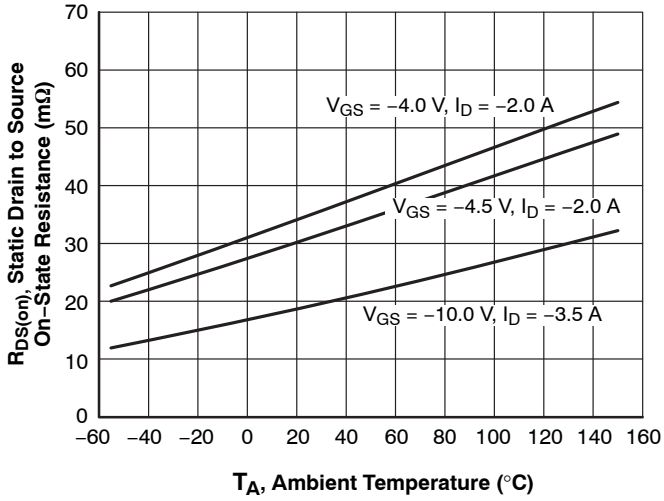


Figure 5. $R_{DS(on)} - T_A$

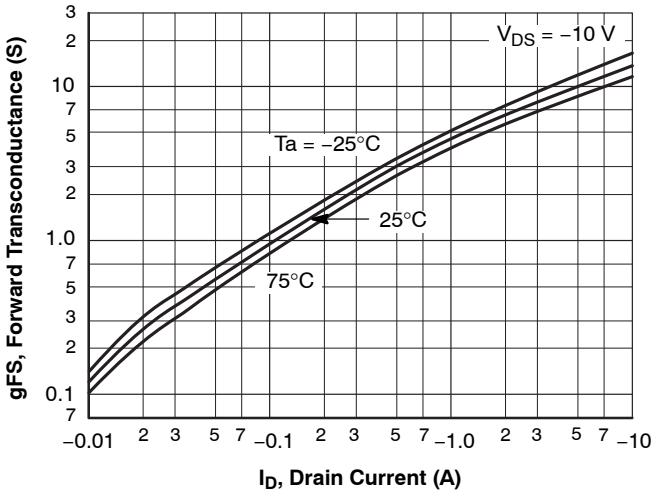


Figure 6. $gFS - I_D$

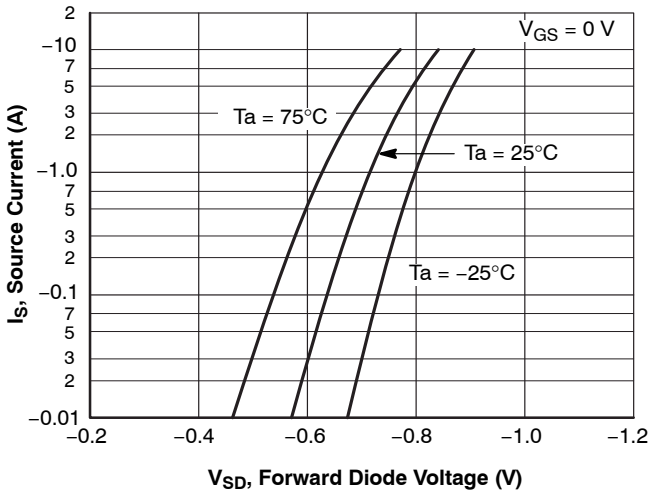


Figure 7. $I_S - V_{SD}$

TYPICAL CHARACTERISTICS (continued)

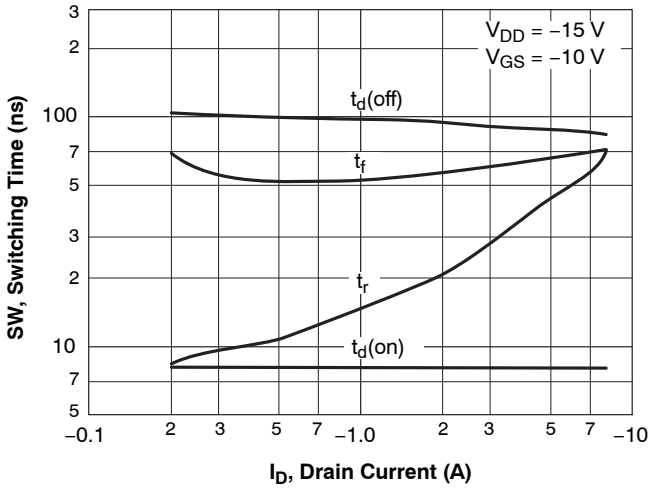


Figure 8. SW Time – I_D

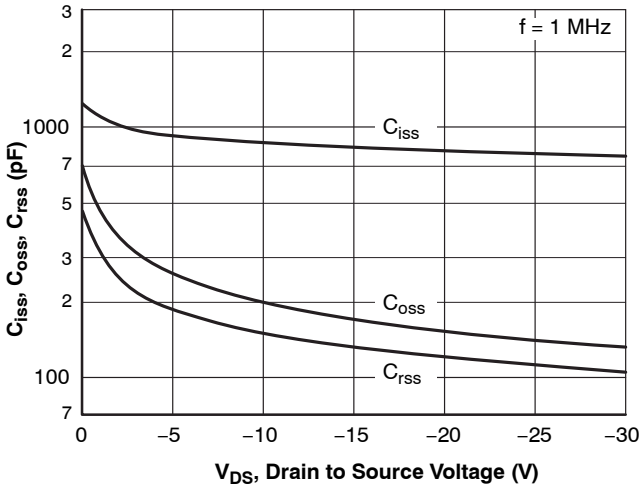


Figure 9. C_{iss}, C_{oss}, C_{rss} – V_{DS}

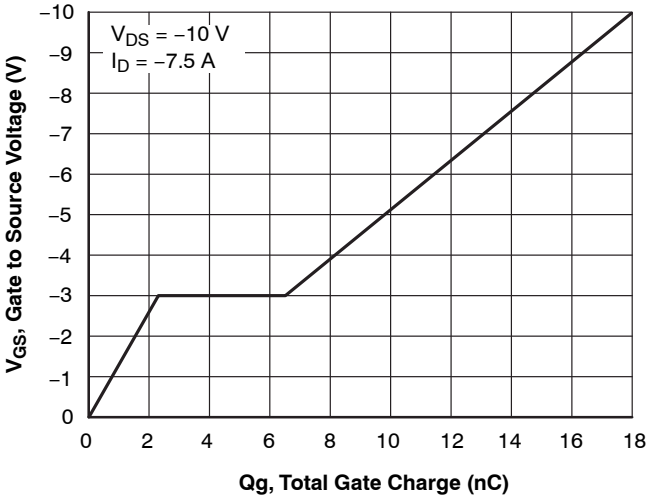


Figure 10. V_{GS} – Qg

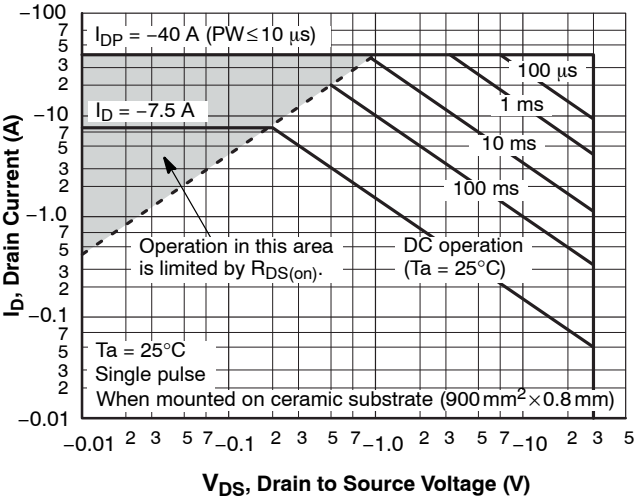


Figure 11. SOA

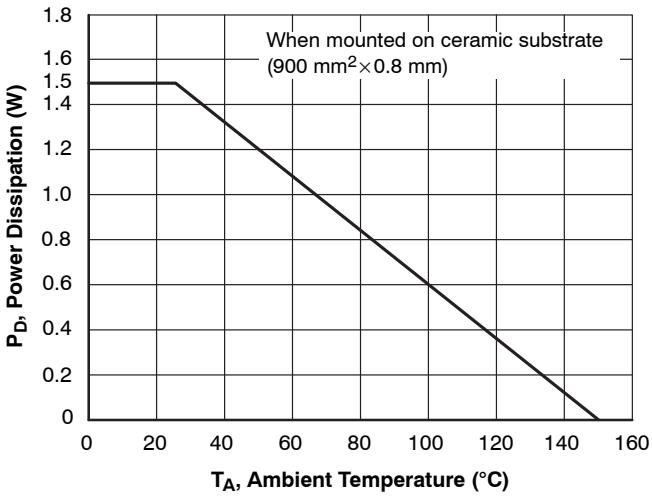


Figure 12. P_D – Ta

TYPICAL CHARACTERISTICS (CONTINUED)

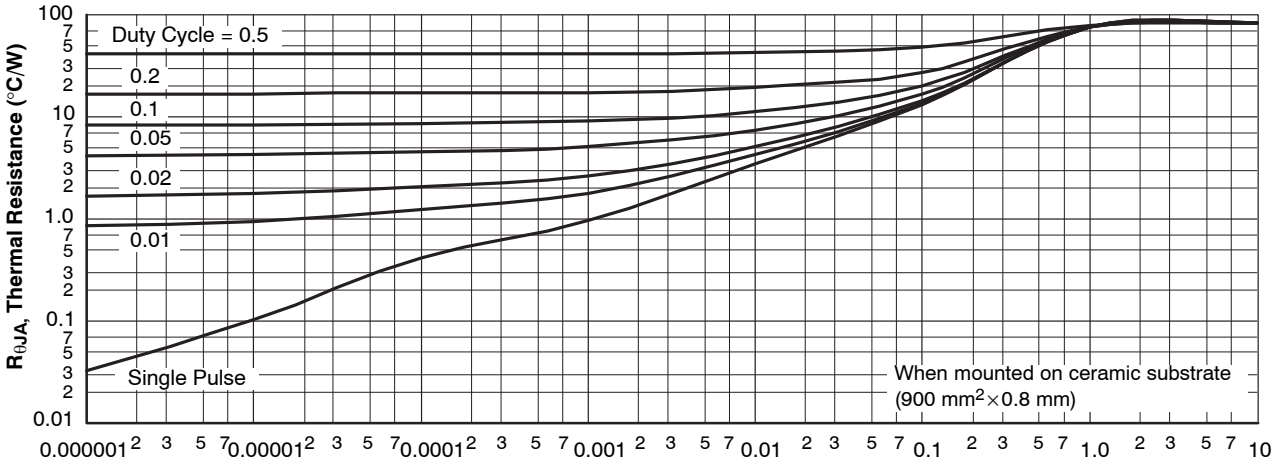


Figure 13. $R_{\theta JA}$ – Pulse Time

ORDERING INFORMATION

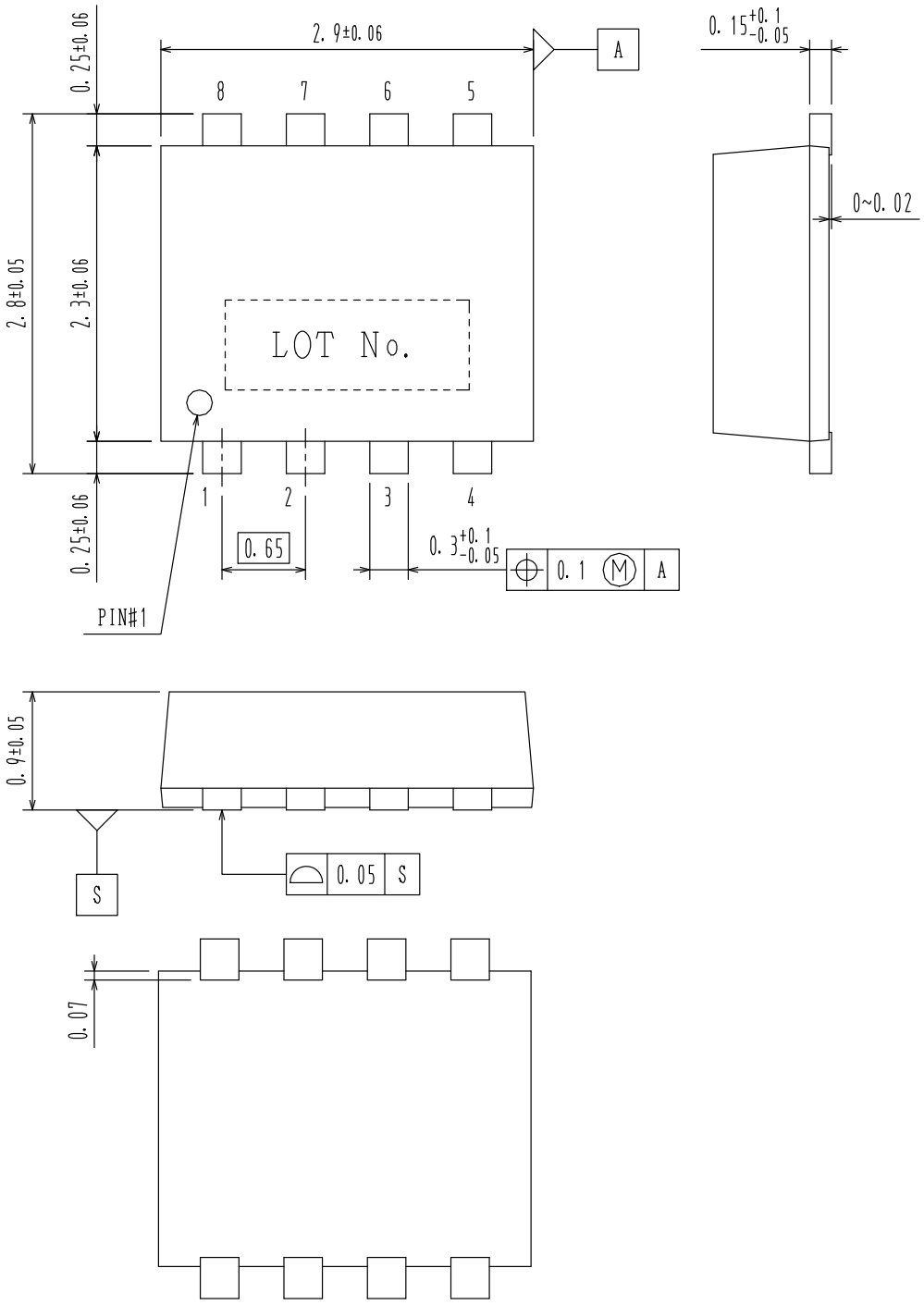
Product Number	Marking	Package	Shipping (Qty / Packing)†
ECH8315−TL−H	JS	SOT−28FL / ECH8 (Pb−Free / Halogen Free)	3000 / Tape and Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

Note on usage : Since the ECH8315 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

SOT−28FL / ECH8
CASE 318BF
ISSUE O

DATE 31 MAR 2012



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DESCRIPTION:	**SOT−28FL / ECH8**		**PAGE 1 OF 1**

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:
Technical Library: www.onsemi.com/design/resources/technical−documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support
For additional information, please contact your local Sales Representative at
www.onsemi.com/support/sales