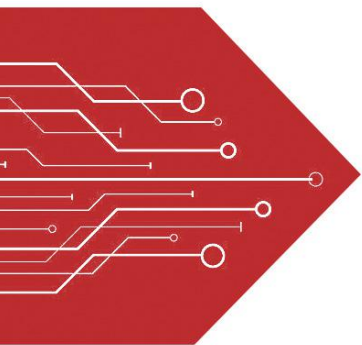


MSKSEMI

SEMICONDUCTOR



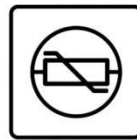
ESD



TVS



TSS



MOV



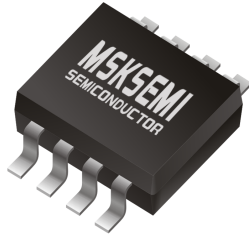
GDT



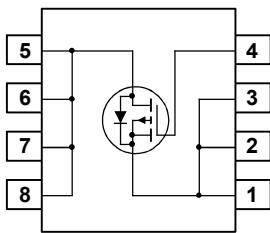
PLED

Product data sheet

www.msksemi.com



SOP-8



1 Source 5 Drain
2 Source 6 Drain
3 Source 7 Drain
4 Gate 8 Drain

Features

- $V_{DS} = -30V$
- $I_D = -5.3 A$ ($V_{GS} = -10V$)
- $R_{DS(ON)} < 50m\Omega$ ($V_{GS} = -10V$)
- $R_{DS(ON)} < 80m\Omega$ ($V_{GS} = -4.5V$)
- Fast switching speed

Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	-5.3	A
Pulsed Drain Current	I_{DM}	-20	
Power Dissipation (Note.1) (Note.2) (Note.3)	P_D	2.5	W
		1.2	
		1	
Thermal Resistance.Junction- to-Ambient	R_{thJA}	50	$^\circ C/W$
Thermal Resistance.Junction- to-Case	R_{thJC}	25	
Junction Temperature	T_J	150	$^\circ C$
Junction Storage Temperature Range	T_{stg}	-55 to 150	

Note.1: $50^\circ C/W$ when mounted on a $1in^2$ pad of 2 oz copper

Note.2: $105^\circ C/W$ when mounted on a $.04in^2$ pad of 2 oz copper

Note.3: $125^\circ C/W$ when mounted on a minimum pad.

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =-250 μ A, V _{GS} =0V	-30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-24V, V _{GS} =0V			-1	μ A
Gate-Body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =-250 μ A	-1		-3	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-5.3A (Note.1)			50	m Ω
		V _{GS} =-10V, I _D =-5.3A, T _J =125°C (Note.1)			79	
		V _{GS} =-4.5V, I _D =-4.2A (Note.1)			80	
On state drain current	I _{D(ON)}	V _{GS} =-10V, V _{DS} =-5V (Note.1)	-20			A
Forward Transconductance	g _{FS}	V _{DS} =-15V, I _D =-5.3A (Note.1)		12		S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-15V, f=1MHz		690		pF
Output Capacitance	C _{oss}			306		
Reverse Transfer Capacitance	C _{rss}			77		
Total Gate Charge	Q _g	V _{GS} =-15V, V _{DS} =-10V, I _D =-5.3A		14	23	nC
Gate Source Charge	Q _{gs}			2.4		
Gate Drain Charge	Q _{gd}			4.8		
Turn-On DelayTime	t _{d(on)}	V _{GS} =-10V, V _{DS} =-15V, I _D =-1A, R _G =6 Ω		7	14	ns
Turn-On Rise Time	t _r			10	18	
Turn-Off DelayTime	t _{d(off)}			19	34	
Turn-Off Fall Time	t _f			11	20	
Maximum Body-Diode Continuous Current	I _S				-5.3	A
Diode Forward Voltage	V _{SD}	I _S =-5.3A, V _{GS} =0V (Note.1)			-1.2	V

Note.1: Pulse Test: Pulse Width < 300μs, Duty Cycle < 2.0%

■ Typical Characteristics

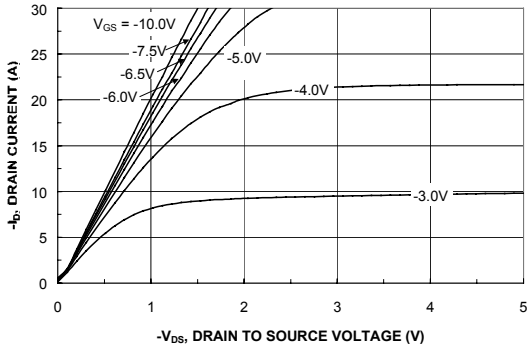


Figure 1. On-Region Characteristics.

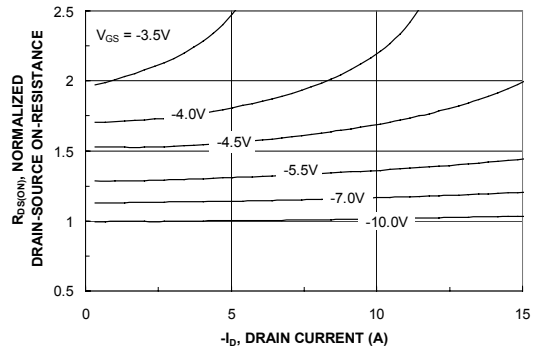


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage.

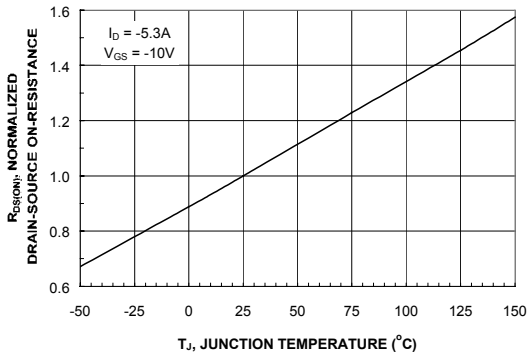


Figure 3. On-Resistance Variation with Temperature.

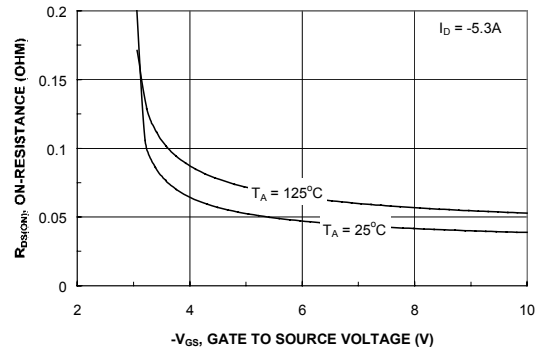


Figure 4. On-Resistance Variation with Gate-to-Source Voltage.

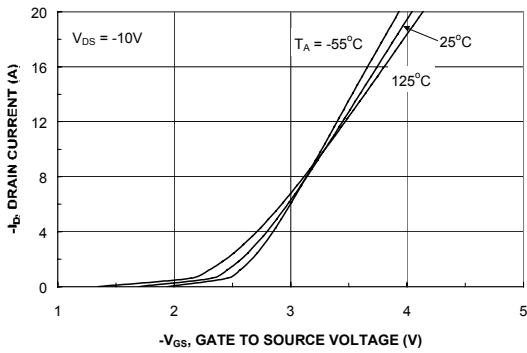


Figure 5. Transfer Characteristics.

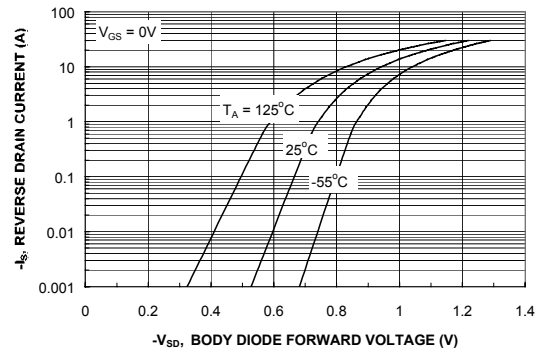


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature.

■ Typical Characteristics

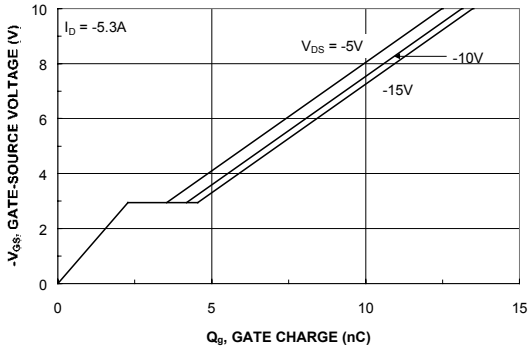


Figure 7. Gate Charge Characteristics.

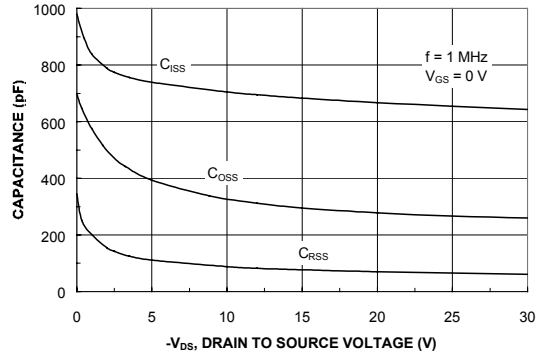


Figure 8. Capacitance Characteristics.

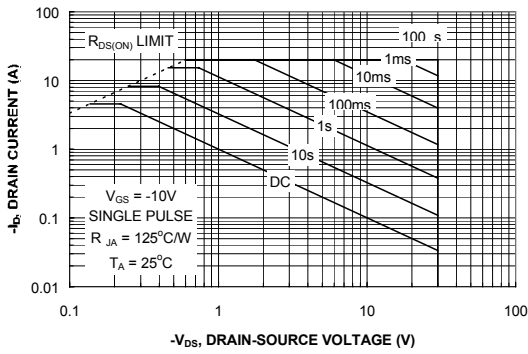


Figure 9. Maximum Safe Operating Area.

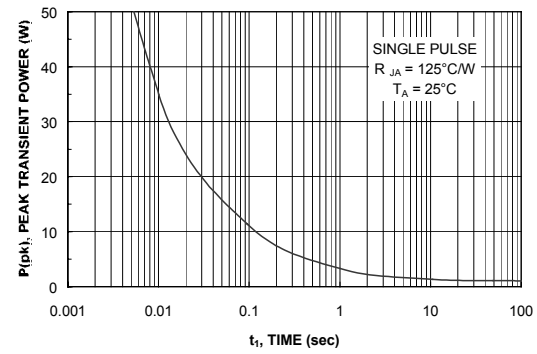


Figure 10. Single Pulse Maximum Power Dissipation.

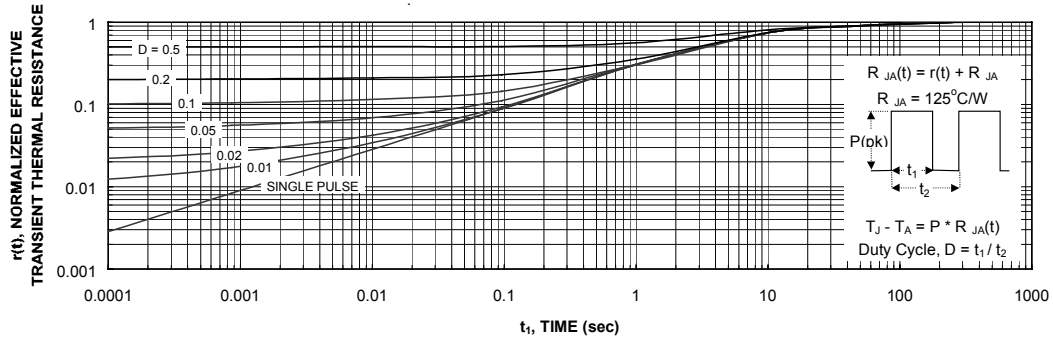
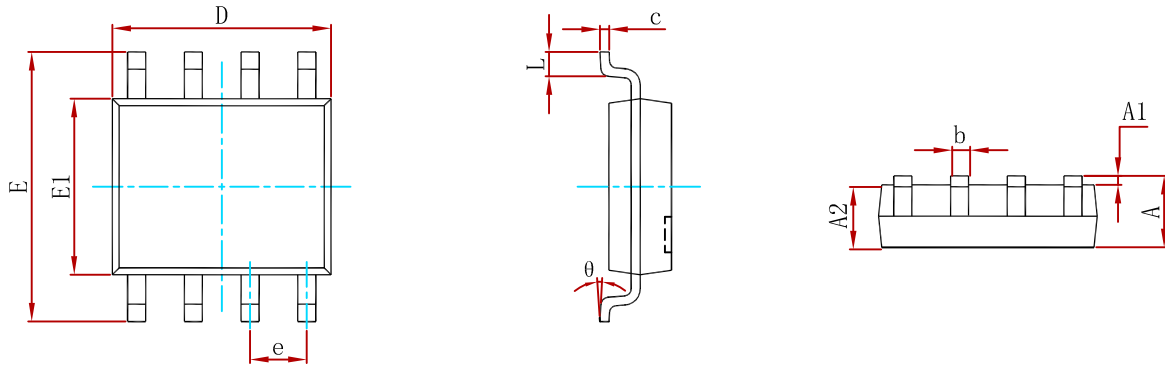


Figure 11. Transient Thermal Response Curve.

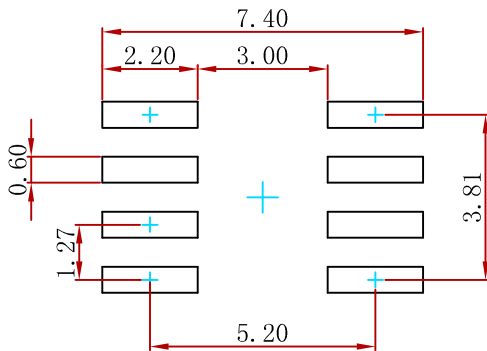
Thermal characterization performed using the conditions described in Note 1c.
Transient thermal response will change depending on the circuit board design.

PACKAGE MECHANICAL DATA



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Suggested Pad Layout



Note:
 1. Controlling dimension: in millimeters.
 2. General tolerance: ± 0.05mm.
 3. The pad layout is for reference purposes only.

REEL SPECIFICATION

P/N	PKG	QTY
MS9435	SOP-8	3000

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