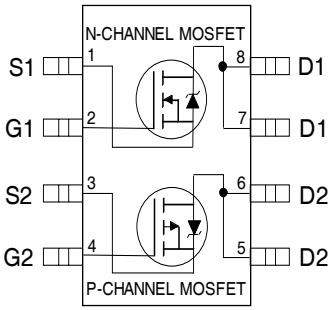
Features

N-Ch:

- $V_{DS\ (V)}$=25V
- $R_{DS(ON)}$ < 100mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ < 160 mΩ (V_{GS} = 4.5V)

P-Ch:

- $V_{DS\ (V)}$=-25V
- $R_{DS(ON)}$ < 250mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ < 400 mΩ (V_{GS} = 4.5V)
- Advanced Process Technology Ultra
- Low On-Resistance
- Surface Mount
- Available in Tape & Reel
- Dynamic dv/dt Rating
- Fast Switching
- Lead-Free



Top View

Description

The SOP-8 has been modified through a customized eadframe "or enhanced therma characterstics and multiple-die capability making it ideal in a variety of power applications. With these improvements. multiple devices can be used in an application with dramatically reduced board space. The package is designed for vapor phase. infra red. or wave solderino techniques. Power dissipation of greater than 0.8W is possible in a typical PCB mount application.

Absolute Maximum Ratings

	Parameter	Max.		Units
		N-Channel	P-Channel	
I_D @ T_A = 25°C	Continuous Drain Current, V_{GS} @ 10V	3.5	-2.3	A
I_D @ T_A = 70°C	Continuous Drain Current, V_{GS} @ 10V	2.8	-1.8	
I_{DM}	Pulsed Drain Current ①	14	-10	
P_D @T_C = 25°C	Power Dissipation	2.0		W
	Linear Derating Factor	0.016		W/°C
V_{GS}	Gate-to-Source Voltage	± 20		V
dv/dt	Peak Diode Recovery dv/dt ②	3.0	-3.0	V/nS
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to + 150		℃

Thermal Resistance Ratings

	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient ④			62.5	°C/W

Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameter		Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	N-Ch	25			V	V_{GS} = 0V, I_D = 250μA
		P-Ch	-25				V_{GS} = 0V, I_D = -250μA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	N-Ch		0.030		V/°C	Reference to 25°C, I_D = 1mA
		P-Ch		-0.015			Reference to 25°C, I_D = -1mA
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	N-Ch		83	100	mΩ	V_{GS} = 10V, I_D = 1.0A ③
				140	160		V_{GS} = 4.5V, I_D = 0.50A ③
		P-Ch		160	250		V_{GS} = -10V, I_D = -1.0A ③
				300	400		V_{GS} = -4.5V, I_D = -0.50A ③
$V_{GS(th)}$	Gate Threshold Voltage	N-Ch	1.0		3.0	V	V_{DS} = V_{GS}, I_D = 250μA
		P-Ch	-1.0		-3.0		V_{DS} = V_{GS}, I_D = -250μA
g_{fs}	Forward Transconductance	N-Ch		4.3		S	V_{DS} = 15V, I_D = 3.5A ③
		P-Ch		3.1			V_{DS} = -15V, I_D = -3.5A ③
I_{DSS}	Drain-to-Source Leakage Current	N-Ch			2.0	μA	V_{DS} = 20V, V_{GS} = 0V
		P-Ch			-2.0		V_{DS} = -20V, V_{GS} = 0V,
		N-Ch			25		V_{DS} = 20V, V_{GS} = 0V, T_J = 55°C
		P-Ch			-25		V_{DS} = -20V, V_{GS} = 0V, T_J = 55°C
I_{GSS}	Gate-to-Source Forward Leakage	N-P			±100		V_{GS} = ± 20V
Q_g	Total GateCharge	N-Ch		9.4	27	nC	N-Channel I_D = 2.3A, V_{DS} = 12.5V, V_{GS} = 10V ③ P-Channel I_D = -2.3A, V_{DS} = -12.5V, V_{GS} = -10V
		P-Ch		10	25		
Q_{gs}	Gate-to-Source Charge	N-Ch			1.7		
		P-Ch		1.9			
Q_{gd}	Gate-to-Drain ("Miller") Charge	N-Ch			3.1		
		P-Ch			2.8		
$t_{d(on)}$	Turn-On Delay Time	N-Ch		7.0	20	ns	N-Channel V_{DD} = 25V, I_D = 1.0A, R_G = 6.0Ω, R_D = 25Ω ③ P-Channel V_{DD} = -25V, I_D = -1.0A, R_G = 6.0Ω, R_D = 25Ω Between lead , 6mm (0.25in.)from package and center of die contact
		P-Ch		12	40		
t_r	Rise Time	N-Ch		9.0	20		
		P-Ch		13	40		
$t_{d(off)}$	Turn-Off Delay Time	N-Ch		45	90		
		P-Ch		45	90		
t_f	Fall Time	N-Ch		25	50		
		N-P		4.0			
L_S	Internal Drain Inductace	P-Ch		37	50	nH	
L_D	Internal Source Inductance	N-P		6.0			
C_{iss}	Input Capacitance	N-Ch		330		pF	N-Channel V_{GS} = 0V, V_{DS} = 15V, f = 1.0MHz P-Channel V_{GS} = 0V, V_{DS} = -15V, f = 1.0MHz
		P-Ch		290			
C_{oss}	Output Capacitance	N-Ch		250			
		P-Ch		210			
C_{rss}	Reverse Transfer Capacitance	N-Ch		61			
		P-Ch		67			

Source-Drain Ratings and Characteristics

	Parameter		Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	N-Ch			2.0	A	
		P-Ch			-2.0		
I_{SM}	Pulsed Source Current (Body Diode) ①	N-Ch			14		
		P-Ch			-9.2		
V_{SD}	Diode Forward Voltage	N-Ch			1.2	V	T_J = 25°C, I_S = 1.3A, V_{GS} = 0V ③
		P-Ch	—	—	-1.2		T_J = 25°C, I_S = -1.3A, V_{GS} = 0V ③
t_{rr}	Reverse Recovery Time	N-Ch	—	36	54	ns	N-Channel T_J = 25°C, I_F = 1.3A, di/dt = 100A/μs P-Channel ③ T_J = 25°C, I_F = -1.3A, di/dt = 100A/μs
		P-Ch	—	69	100		
Q_{rr}	Reverse Recovery Charge	N-Ch		41	75	nC	
		P-Ch		90	180		
t_{on}	Forward Turn-On Time	N-P	Intrinsic turn-on time is neglegible (turn-on is dominated by L_S+L_D)				

Notes:

① Repetitive rating; pulse width limited by max. junction temperature.

② N-Channel I_{SD} ≤ 3.5A, di/dt ≤ 90A/μs, V_{DD} ≤ $V_{(BR)DSS}$, T_J ≤ 150°C
P-Channel I_{SD} ≤ -2.3A, di/dt ≤ 90A/μs, V_{DD} ≤ $V_{(BR)DSS}$, T_J ≤ 150°C

③ Pulse width ≤ 300μs; duty cycle ≤ 2%.

④ Surface mounted on FR-4 board, t ≤ 10sec.

N-Channel

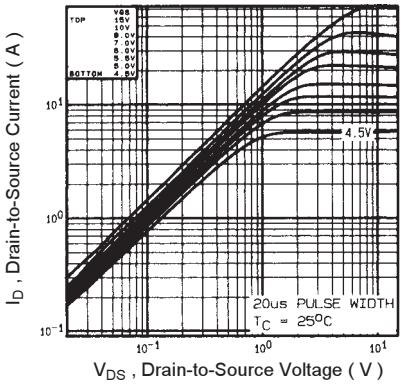


Fig 1. Typical Output Characteristics

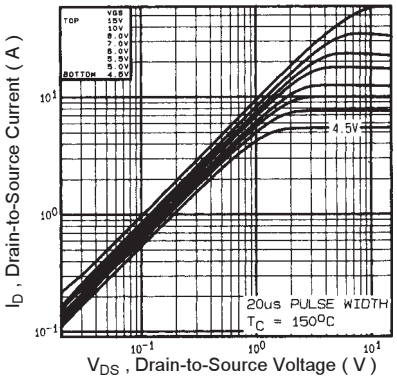


Fig 2. Typical Output Characteristics

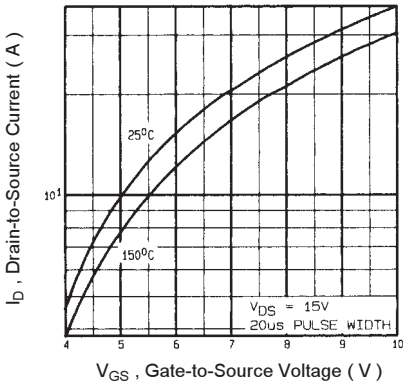


Fig 3. Typical Transfer Characteristics

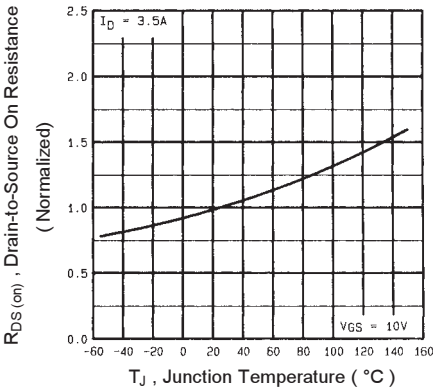


Fig 4. Normalized On-Resistance Vs. Temperature

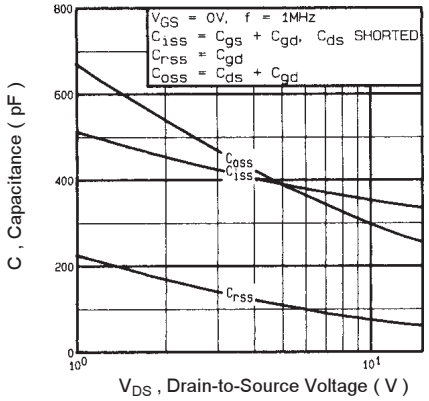


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

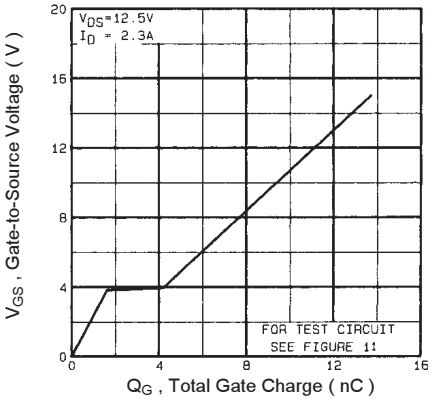


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

N-Channel

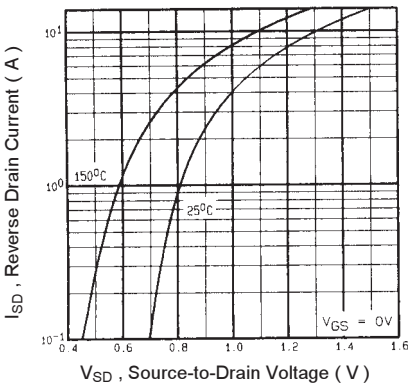


Fig 7. Typical Source-Drain Diode Forward Voltage

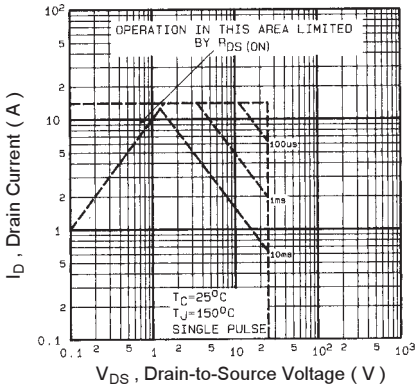


Fig 8. Maximum Safe Operating Area

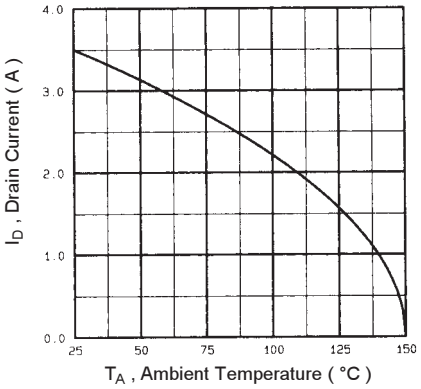


Fig 9. Maximum Drain Current Vs. Ambient Temperature

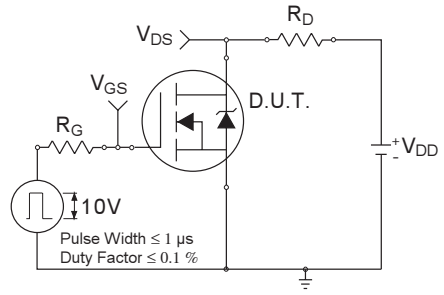


Fig 10a. Switching Time Test Circuit

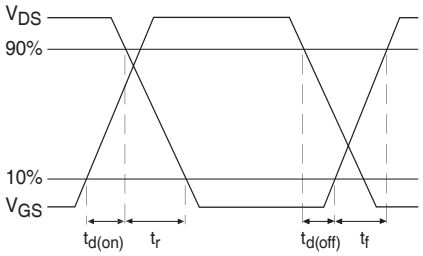


Fig 10b. Switching Time Waveforms

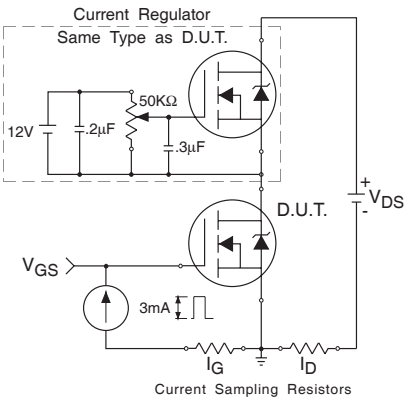


Fig 11a. Gate Charge Test Circuit

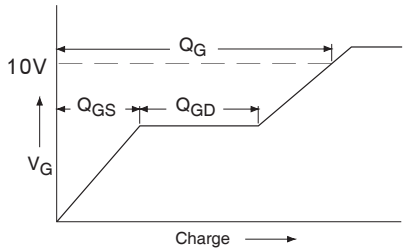


Fig 11b. Basic Gate Charge Waveform

P-Channel

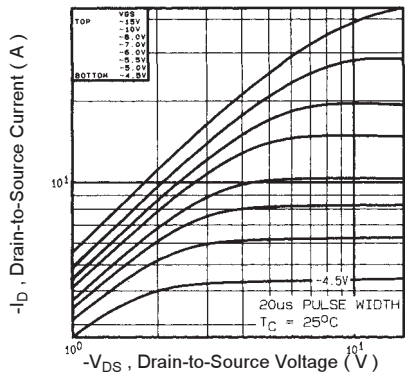


Fig 12. Typical Output Characteristics

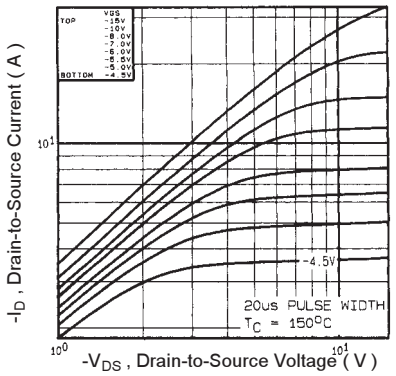


Fig 13. Typical Output Characteristics

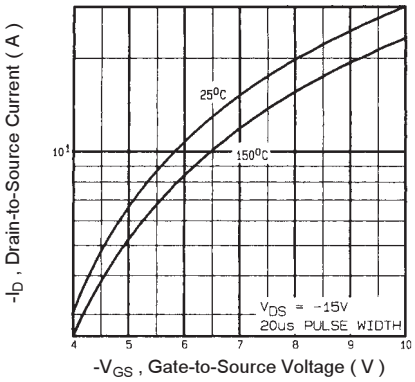


Fig 14. Typical Transfer Characteristics

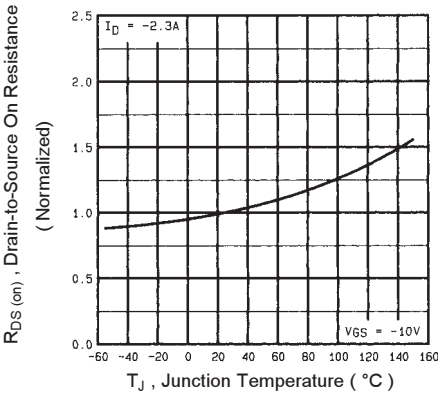


Fig 15. Normalized On-Resistance Vs. Temperature

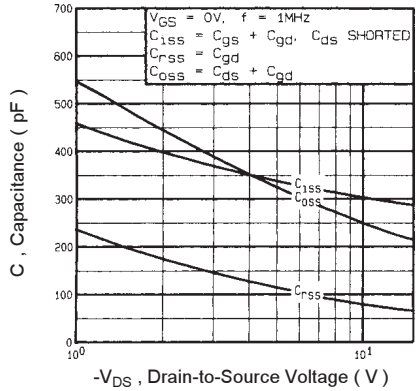


Fig 16. Typical Capacitance Vs. Drain-to-Source Voltage

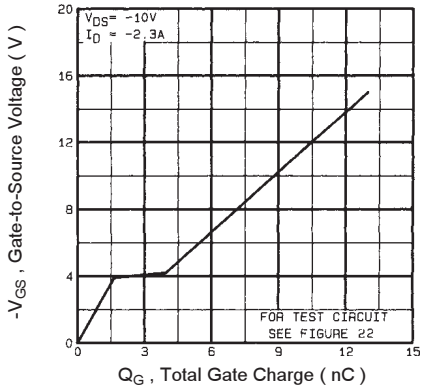


Fig 17. Typical Gate Charge Vs. Gate-to-Source Voltage

P-Channel

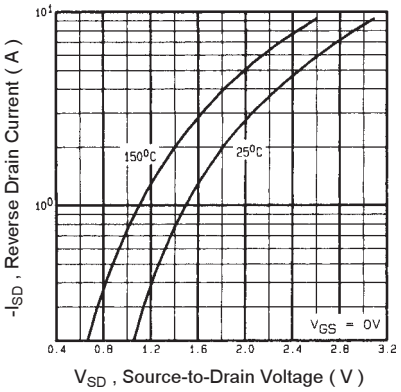


Fig 18. Typical Source-Drain Diode Forward Voltage

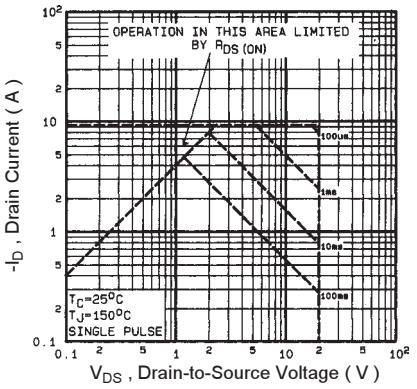


Fig 19. Maximum Safe Operating Area

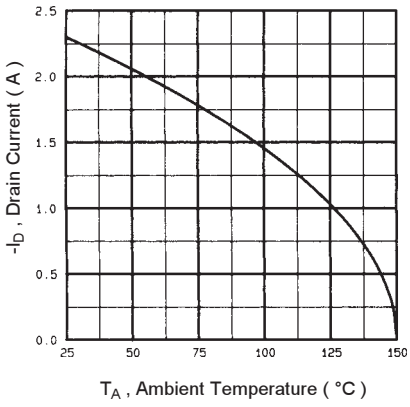


Fig 20. Maximum Drain Current Vs. Ambient Temperature

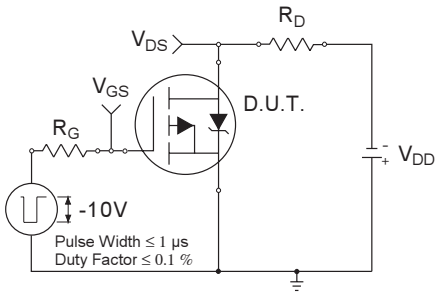


Fig 21a. Switching Time Test Circuit

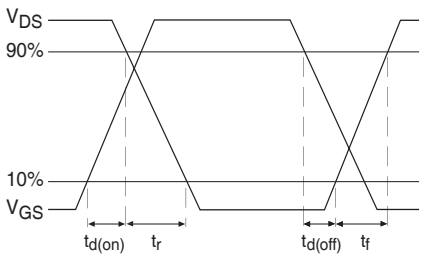


Fig 21b. Switching Time Waveforms

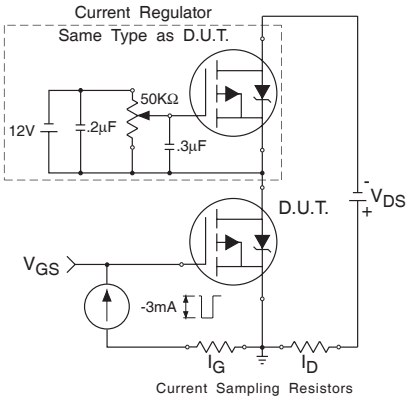


Fig 22a. Gate Charge Test Circuit

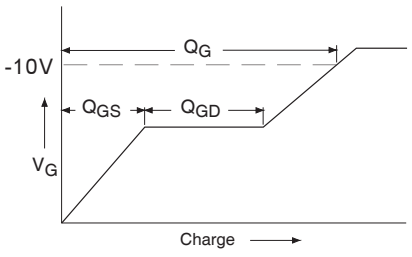


Fig 22b. Basic Gate Charge Waveform

N & P-Channel

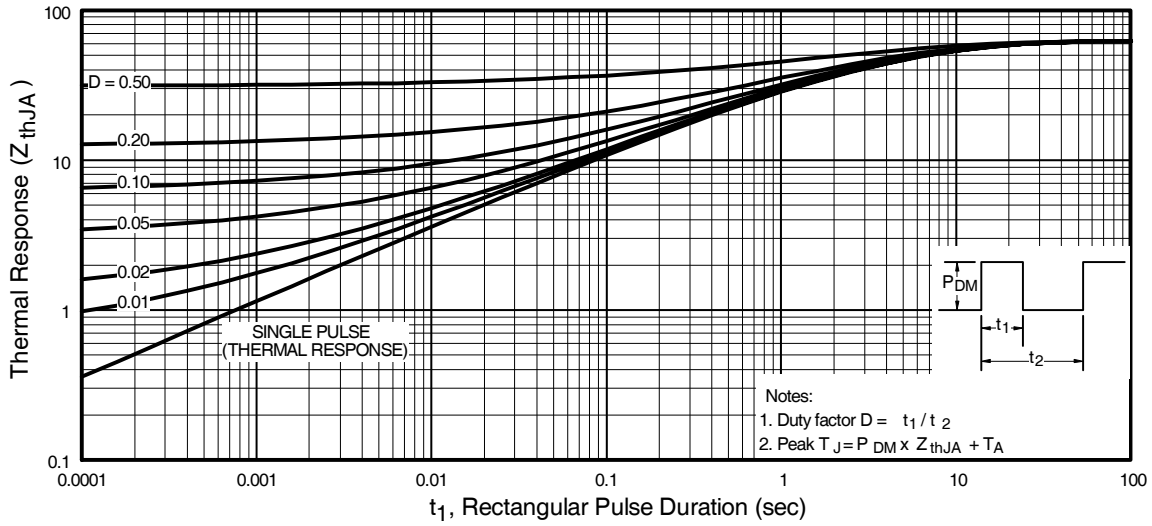
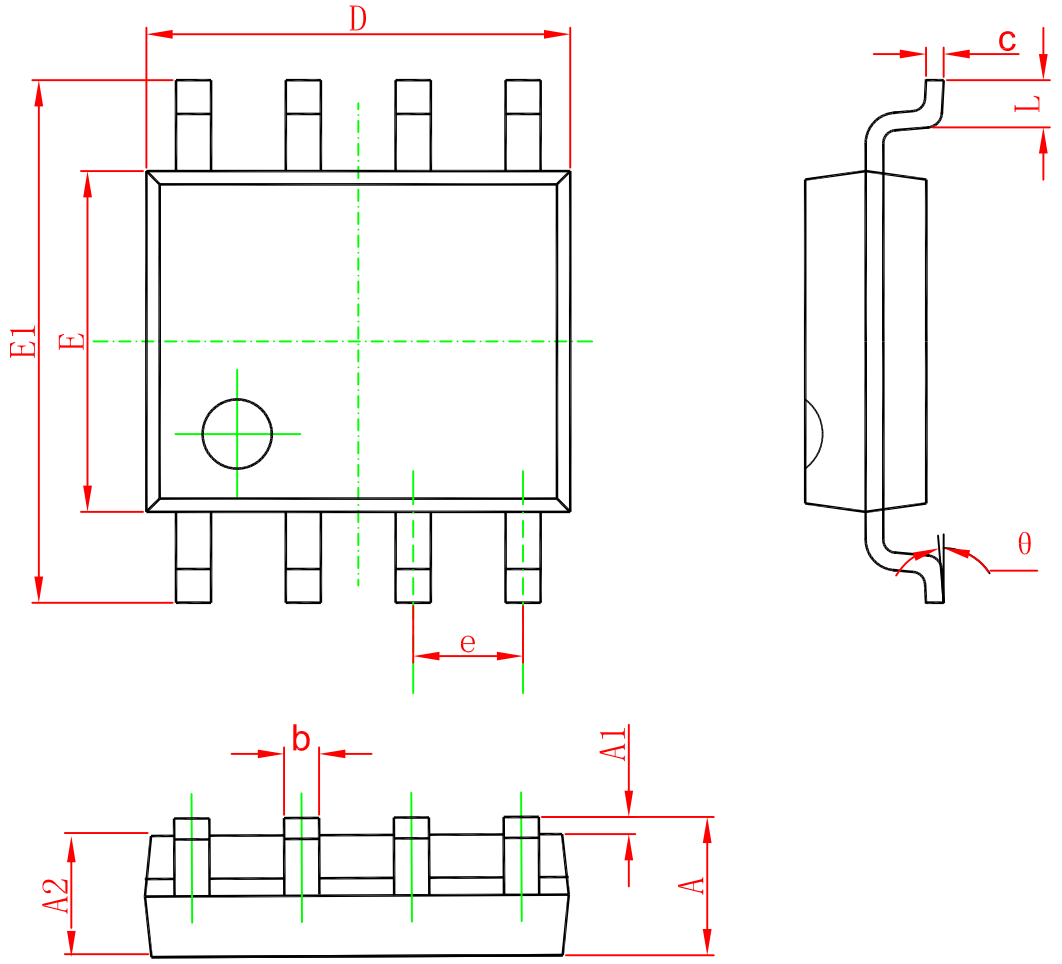


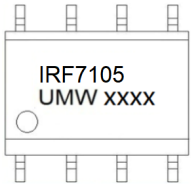
Fig 23. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

SOP-8



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	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
UMW IRF7105TR	SOP-8	3000	Tape and reel

单击下面可查看定价，库存，交付和生命周期等信息

>>UMW(友台半导体)