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[International Rectifier \(Infineon Technologies Americas Corp.\)
IRF5802TRPBF](#)

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sales@integrated-circuit.com

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SMPS MOSFET

PD- 95475B
IRF5802PbF

HEXFET® Power MOSFET

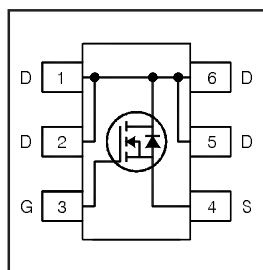
Applications

- High frequency DC-DC converters

V_{DSS}	R_{DS(on)} max	I_D
150V	1.2Ω@V_{GS} = 10V	0.9A

Benefits

- Low Gate to Drain Charge to Reduce Switching Losses
- Fully Characterized Capacitance Including Effective C_{oss} to Simplify Design, (See App. Note AN1001)
- Fully Characterized Avalanche Voltage and Current
- Lead-Free
- Halogen-Free



Absolute Maximum Ratings

	Parameter	Max.	Units
I _D @ T _A = 25°C	Continuous Drain Current, V _{GS} @ 10V	0.9	A
I _D @ T _A = 70°C	Continuous Drain Current, V _{GS} @ 10V	0.7	
I _{DM}	Pulsed Drain Current ①	7.0	
P _D @ T _A = 25°C	Power Dissipation④	2.0	W
	Linear Derating Factor	0.02	W/°C
V _{GS}	Gate-to-Source Voltage	± 30	V
dv/dt	Peak Diode Recovery dv/dt ⑥	7.1	V/ns
T _J	Operating Junction and	-55 to + 150	°C
T _{STG}	Storage Temperature Range		
	Soldering Temperature, for 10 seconds	300 (1.6mm from case)	

Thermal Resistance

	Parameter	Max.	Units
R _{θJA}	Maximum Junction-to-Ambient④	62.5	°C/W

Notes ① through ⑥ are on page 8
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Static @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
V _{(BR)DSS}	Drain-to-Source Breakdown Voltage	150	—	—	V	V _{GS} = 0V, I _D = 250μA
ΔV _{(BR)DSS/ΔT_J}	Breakdown Voltage Temp. Coefficient	—	0.19	—	V/°C	Reference to 25°C, I _D = 1mA ③
R _{DS(on)}	Static Drain-to-Source On-Resistance	—	—	1.2	Ω	V _{GS} = 10V, I _D = 0.54A ③
V _{GS(th)}	Gate Threshold Voltage	3.0	—	5.5	V	V _{DS} = V _{GS} , I _D = 250μA
I _{DSS}	Drain-to-Source Leakage Current	—	—	25	μA	V _{DS} = 150V, V _{GS} = 0V
		—	—	250		V _{DS} = 120V, V _{GS} = 0V, T _J = 125°C
I _{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	V _{GS} = 30V
	Gate-to-Source Reverse Leakage	—	—	-100		V _{GS} = -30V

Dynamic @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
g _{fs}	Forward Transconductance	0.55	—	—	S	V _{DS} = 50V, I _D = 0.54A
Q _g	Total Gate Charge	—	4.5	6.8	nC	I _D = 0.54A
Q _{gs}	Gate-to-Source Charge	—	1.0	1.5		V _{DS} = 120V
Q _{gd}	Gate-to-Drain ("Miller") Charge	—	2.4	3.6		V _{GS} = 10V,
t _{d(on)}	Turn-On Delay Time	—	6.0	—	ns	V _{DD} = 75V
t _r	Rise Time	—	1.6	—		I _D = 0.54A
t _{d(off)}	Turn-Off Delay Time	—	7.5	—		R _G = 6.0Ω
t _f	Fall Time	—	9.2	—		V _{GS} = 10V ③
C _{iss}	Input Capacitance	—	88	—	pF	V _{GS} = 0V
C _{oss}	Output Capacitance	—	26	—		V _{DS} = 25V
C _{rss}	Reverse Transfer Capacitance	—	7.7	—		f = 1.0MHz
C _{oss}	Output Capacitance	—	110	—		V _{GS} = 0V, V _{DS} = 1.0V, f = 1.0MHz
C _{oss}	Output Capacitance	—	14	—		V _{GS} = 0V, V _{DS} = 120V, f = 1.0MHz
C _{oss eff.}	Effective Output Capacitance	—	3.0	—		V _{GS} = 0V, V _{DS} = 0V to 120V ⑤

Avalanche Characteristics

	Parameter	Typ.	Max.	Units
E _{AS}	Single Pulse Avalanche Energy②	—	9.5	mJ
I _{AR}	Avalanche Current①	—	0.9	A

Diode Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode)	—	—	1.8	A	MOSFET symbol showing the integral reverse p-n junction diode.
I _{SM}	Pulsed Source Current (Body Diode) ①	—	—	18		
V _{SD}	Diode Forward Voltage	—	—	1.3	V	T _J = 25°C, I _S = 0.54A, V _{GS} = 0V ③
t _{rr}	Reverse Recovery Time	—	46	69	ns	T _J = 25°C, I _F = 0.54A
Q _{rr}	Reverse Recovery Charge	—	55	83	nC	di/dt = 100A/μs ③

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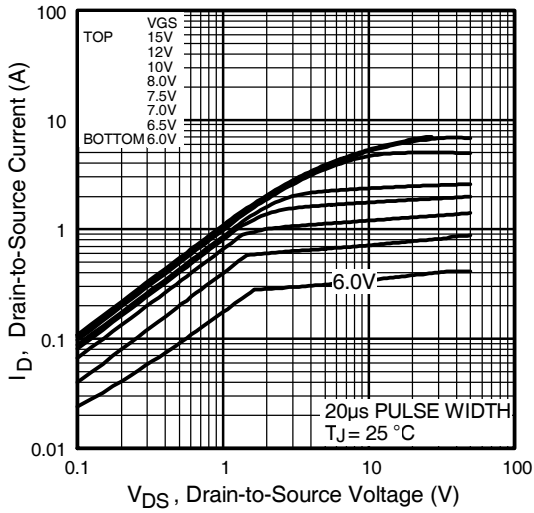


Fig 1. Typical Output Characteristics

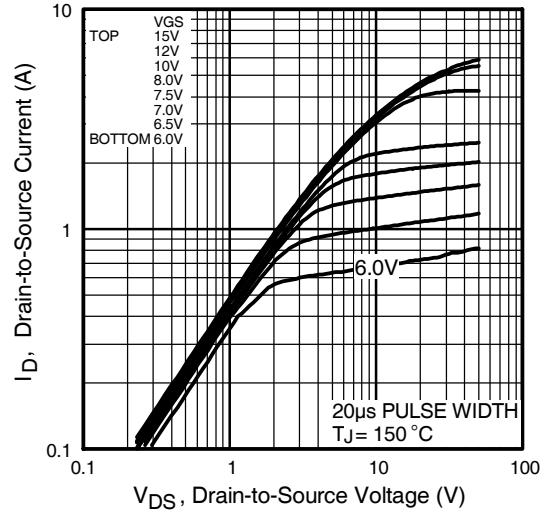


Fig 2. Typical Output Characteristics

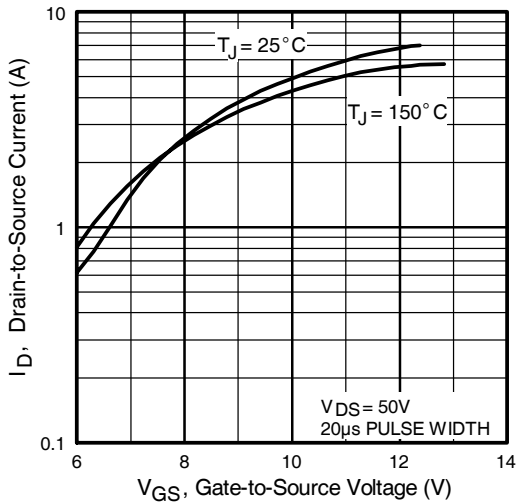


Fig 3. Typical Transfer Characteristics

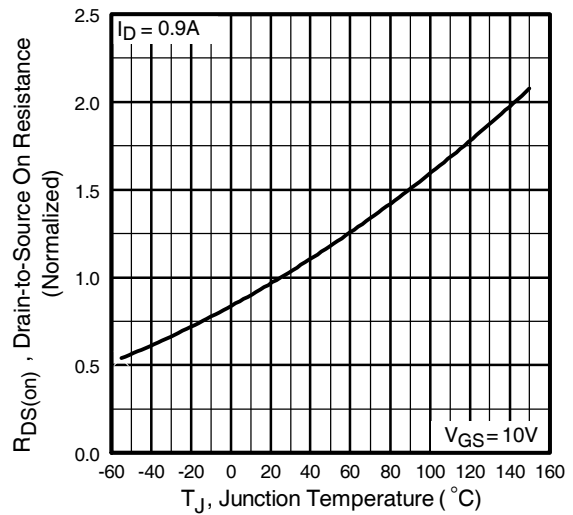


Fig 4. Normalized On-Resistance Vs. Temperature

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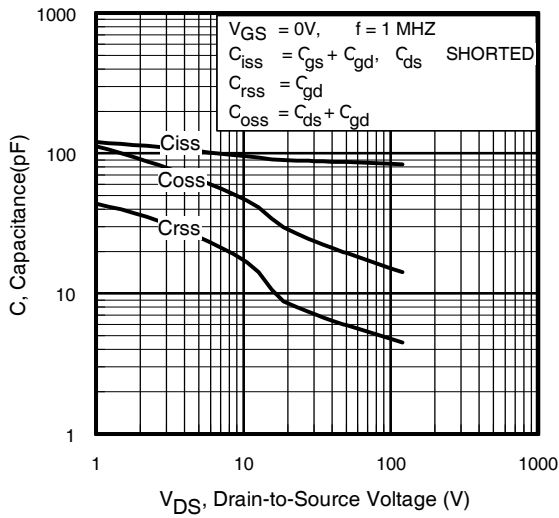


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

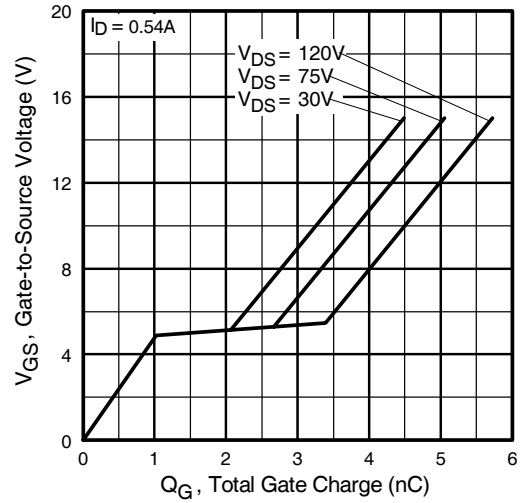


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

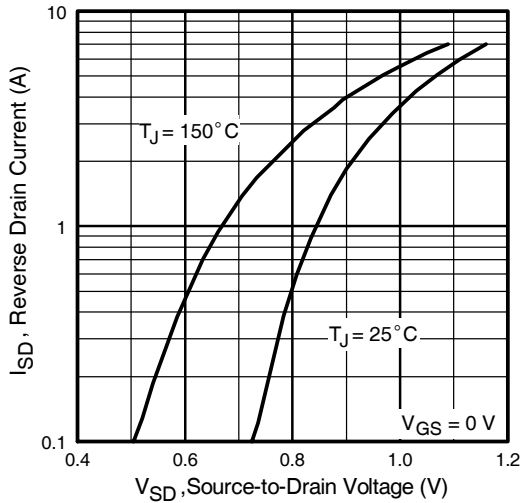


Fig 7. Typical Source-Drain Diode Forward Voltage

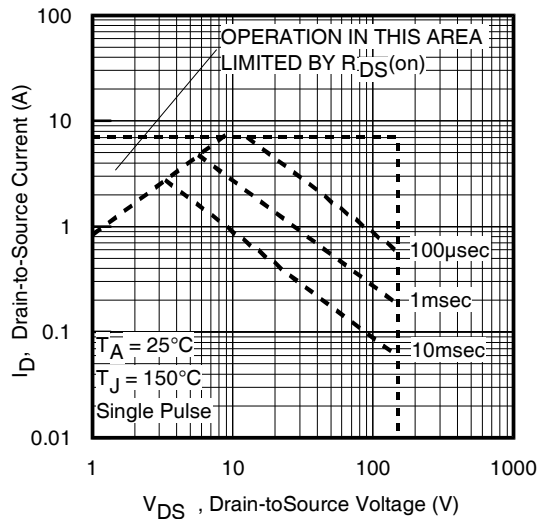


Fig 8. Maximum Safe Operating Area

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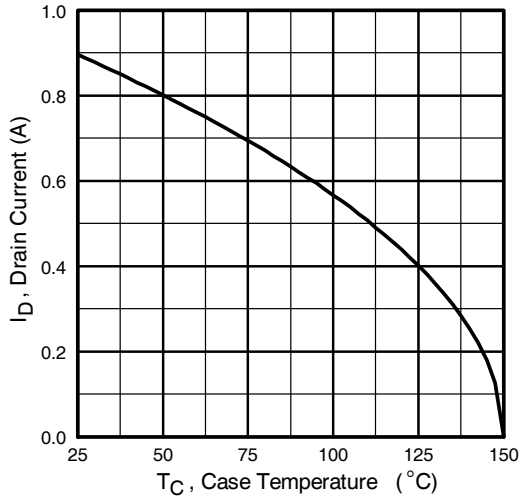


Fig 9. Maximum Drain Current Vs. Case Temperature

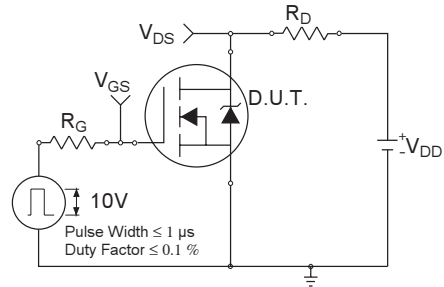


Fig 10a. Switching Time Test Circuit

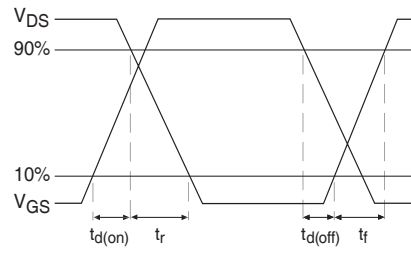


Fig 10b. Switching Time Waveforms

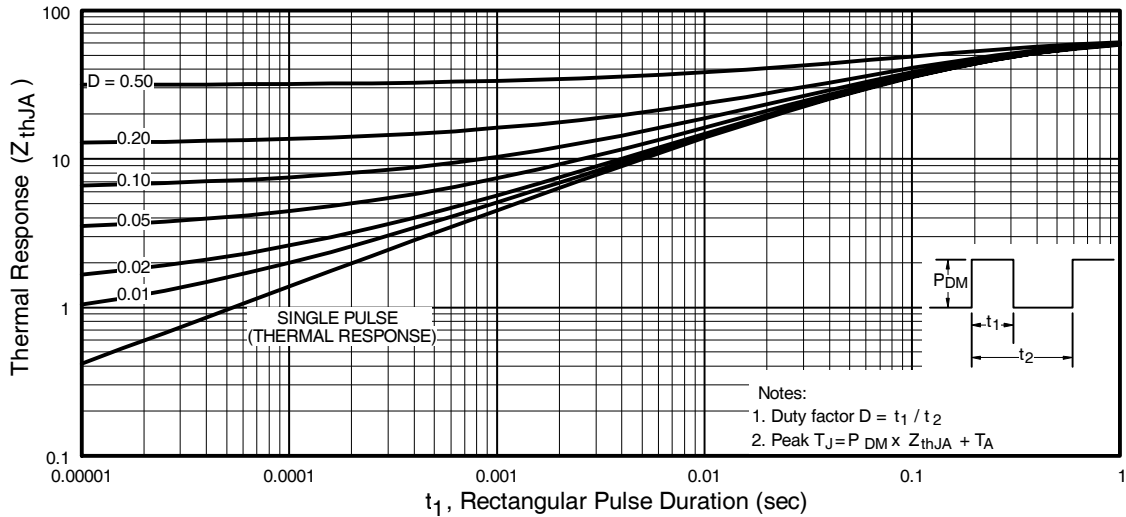


Fig 11. Typical Effective Transient Thermal Impedance, Junction-to-Ambient

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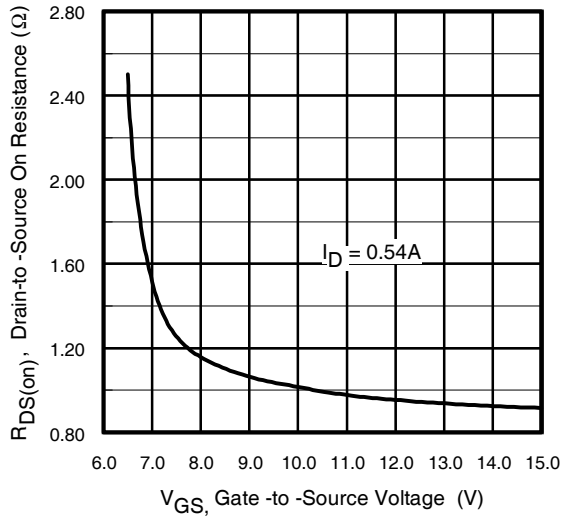


Fig 12. Typical On-Resistance Vs. Gate Voltage

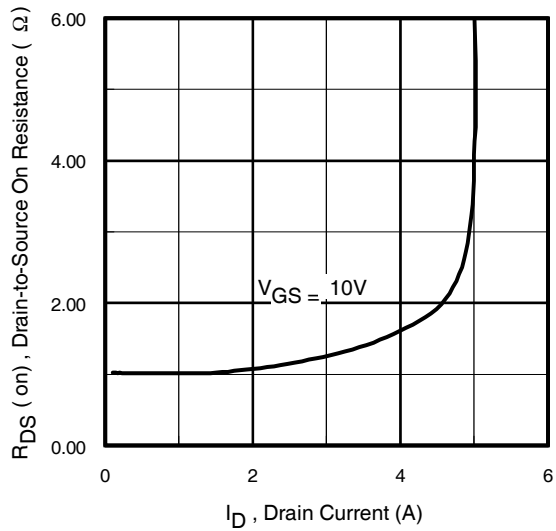


Fig 13. Typical On-Resistance Vs. Drain Current

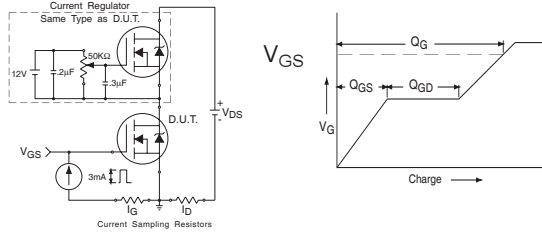


Fig 14a&b. Basic Gate Charge Test Circuit and Waveform

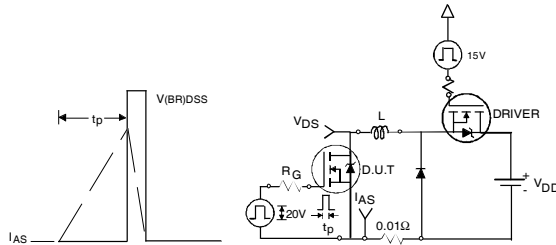


Fig 15a&b. Unclamped Inductive Test circuit and Waveforms

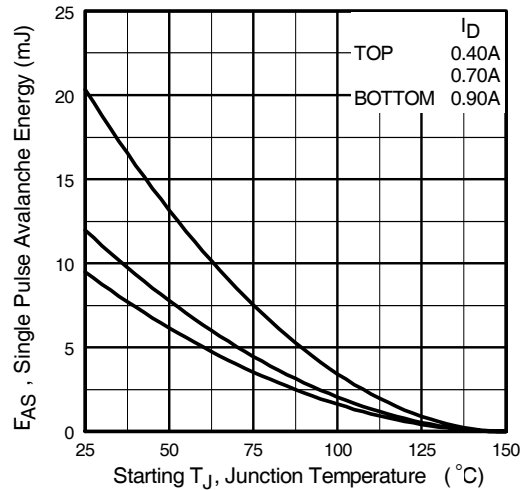


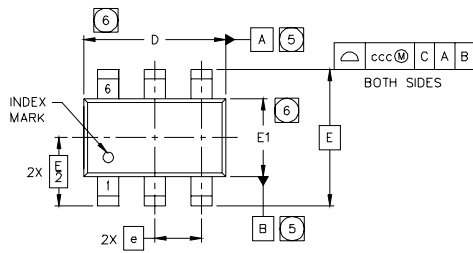
Fig 15c. Maximum Avalanche Energy Vs. Drain Current

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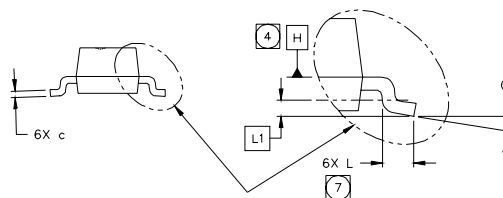
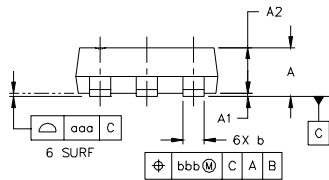
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TSOP-6 Package Outline

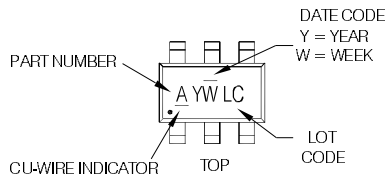


SYMBOL	MO-193AA DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	---	---	1.10	---	---	.0433
A1	0.01	---	0.10	.0004	---	.0039
A2	0.80	0.90	1.00	.0315	.0354	.0393
b	0.25	---	0.50	.0099	---	.0196
c	0.10	---	0.26	.004	---	.010
D	2.90	3.00	3.10	.115	.118	.122
E	2.75 BSC			.108 BSC		
E1	1.30	1.50	1.70	.052	.059	.066
e	1.00 BSC			.039 BSC		
L	0.20	0.40	0.60	.0079	.0157	.0236
L1	0.30 BSC			.0118 BSC		
Ø	0*	---	8*	D*	---	8*
aaa	0.10			.004		
bbb	0.15			.006		
ccc	0.25			.010		



TSOP-6 Part Marking Information

W = (1-26) IF PRECEDED BY LAST DIGIT OF CALENDAR YEAR



PART NUMBER CODE REFERENCE:

- A = SI3443DV K = IRF 5810
- B = IRF 5800 L = IRF 5804
- C = IRF 5850 M = IRF 5803
- D = IRF 5851 N = IRF 5802
- E = IRF 5852
- F = IRF 5801
- I = IRF 5805
- J = IRF 5806

Notes:

- A line above the work week (as shown here) indicates Lead-Free
- A line below the part number (as shown here) indicates Cu-wire

YEAR	Y	WORK WEEK	W
2001	1	01	A
2002	2	02	B
2003	3	03	C
2004	4	04	D
2005	5		
2006	6		
2007	7		
2008	8		
2009	9		
2010	0	24	X
		25	Y
		26	Z

W = (27-52) IF PRECEDED BY A LETTER

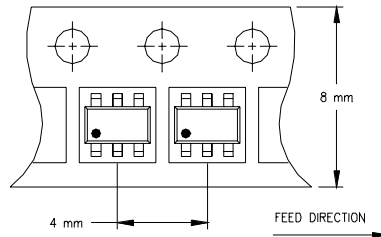
YEAR	Y	WORK WEEK	W
2001	A	27	A
2002	B	28	B
2003	C	29	C
2004	D	30	D
2005	E		
2006	F		
2007	G		
2008	H		
2009	J		
2010	K	50	X
		51	Y
		52	Z

Note: For the most current drawing please refer to IR website at: <http://www.irf.com/package/>
www.irf.com

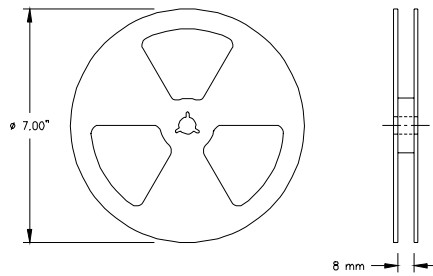
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TSOP-6 Tape & Reel Information



NOTES:
 1. OUTLINE CONFORMS TO EIA-481 & EIA-541.



NOTES:
 1. OUTLINE CONFORMS TO EIA-481 & EIA-541.

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Starting $T_J = 25^\circ\text{C}$, $L = 23\text{mH}$
 $R_G = 25\Omega$, $I_{AS} = 0.54\text{A}$.
- ③ Pulse width $\leq 400\mu\text{s}$; duty cycle $\leq 2\%$.
- ④ When mounted on 1 inch square copper board
- ⑤ C_{OSS} eff. is a fixed capacitance that gives the same charging time as C_{OSS} while V_{DS} is rising from 0 to 80% V_{DSS}
- ⑥ $I_{SD} \leq 0.54\text{A}$, $di/dt \leq 89\text{A}/\mu\text{s}$, $V_{DD} \leq V_{(BR)DSS}$,
 $T_J \leq 150^\circ\text{C}$

Data and specifications subject to change without notice.
 This product has been designed and qualified for the Consumer market.
 Qualification Standards can be found on IR's Web site.

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IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
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