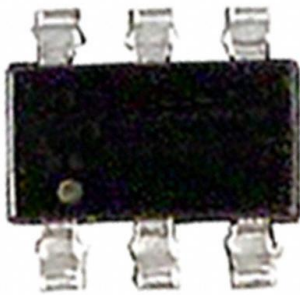


IRF5802TR Datasheet

www.digi-electronics.com



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	IRF5802TR-DG
Manufacturer	Infineon Technologies
Manufacturer Product Number	IRF5802TR
Description	MOSFET N-CH 150V 0.9A 6-TSOP
Detailed Description	N-Channel 150 V 900mA (Ta) Surface Mount Micro6™(TSOP-6)



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.

Purchase and inquiry

Manufacturer Product Number:

IRF5802TR

Series:

-

FET Type:

N-Channel

Drain to Source Voltage (Vdss):

150 V

Rds On (Max) @ Id, Vgs:

1.2Ohm @ 540mA, 10V

Gate Charge (Qg) (Max) @ Vgs:

6.8 nC @ 10 V

FET Feature:

-

Supplier Device Package:

Micro6™(TSOP-6)

Manufacturer:

Infineon Technologies

Product Status:

Obsolete

Technology:

MOSFET (Metal Oxide)

Current - Continuous Drain (Id) @ 25°C:

900mA (Ta)

Vgs(th) (Max) @ Id:

5.5V @ 250µA

Input Capacitance (Ciss) (Max) @ Vds:

88 pF @ 25 V

Mounting Type:

Surface Mount

Package / Case:

SOT-23-6 Thin, TSOT-23-6

Environmental & Export classification

RoHS Status:

RoHS non-compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.29.0095

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

International
IR Rectifier

SMPS MOSFET

PD- 94086

IRF5802

HEXFET® Power MOSFET

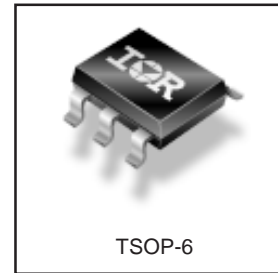
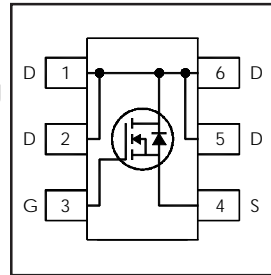
Applications

- 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



Absolute Maximum Ratings

	Parameter	Max.	Units
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V$	0.9	A
$I_D @ T_A = 70^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V$	0.7	
I_{DM}	Pulsed Drain Current ①	7.0	
$P_D @ T_A = 25^\circ\text{C}$	Power Dissipation②	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 ③	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
$R_{\theta JA}$	Maximum Junction-to-Ambient④	62.5	°C/W

Notes ① through ④ are on page 8
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IR RectifierStatic @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	150	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.19	—	V/°C	Reference to 25°C , $I_D = 1\text{mA}$ 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	$V_{DS} = V_{GS}, I_D = 250\mu A$
I_{DSS}	Drain-to-Source Leakage Current	—	—	25	μA	$V_{DS} = 150V, V_{GS} = 0V$
		—	—	250		$V_{DS} = 120V, V_{GS} = 0V, T_J = 125^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	$V_{GS} = 30V$
	Gate-to-Source Reverse Leakage	—	—	-100		$V_{GS} = -30V$

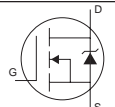
Dynamic @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	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	—		$R_G = 6.0\Omega$
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_{riss}	Reverse Transfer Capacitance	—	7.7	—		$f = 1.0\text{MHz}$
C_{oss}	Output Capacitance	—	110	—		$V_{GS} = 0V, V_{DS} = 1.0V, f = 1.0\text{MHz}$
C_{oss}	Output Capacitance	—	14	—		$V_{GS} = 0V, V_{DS} = 120V, f = 1.0\text{MHz}$
$C_{oss\ eff.}$	Effective Output Capacitance	—	3.0	—		$V_{GS} = 0V, V_{DS} = 0V \text{ to } 120V$ 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	$T_J = 25^\circ\text{C}, I_S = 0.54A, V_{GS} = 0V$ ③
t_{rr}	Reverse Recovery Time	—	46	69	ns	$T_J = 25^\circ\text{C}, I_F = 0.54A$
Q_{rr}	Reverse Recovery Charge	—	55	83	nC	$di/dt = 100A/\mu s$ ③

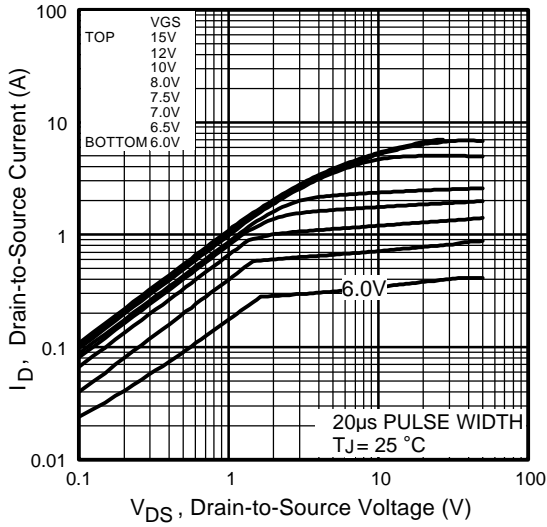


Fig 1. Typical Output Characteristics

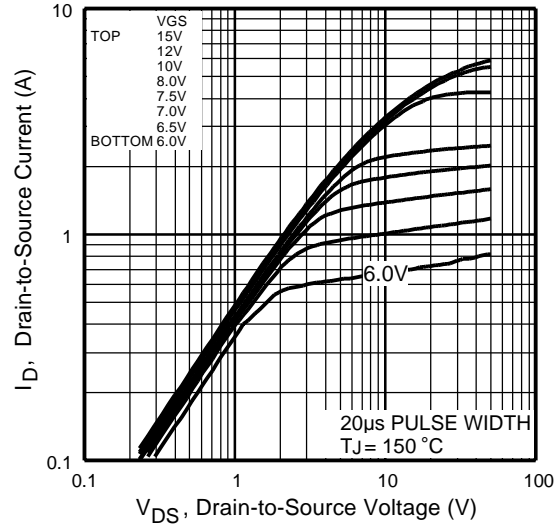


Fig 2. Typical Output Characteristics

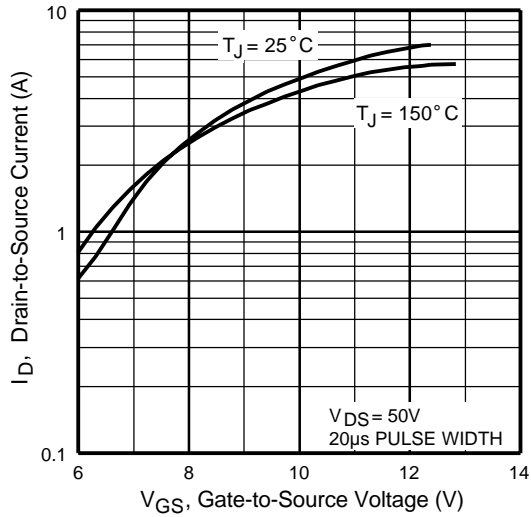


Fig 3. Typical Transfer Characteristics

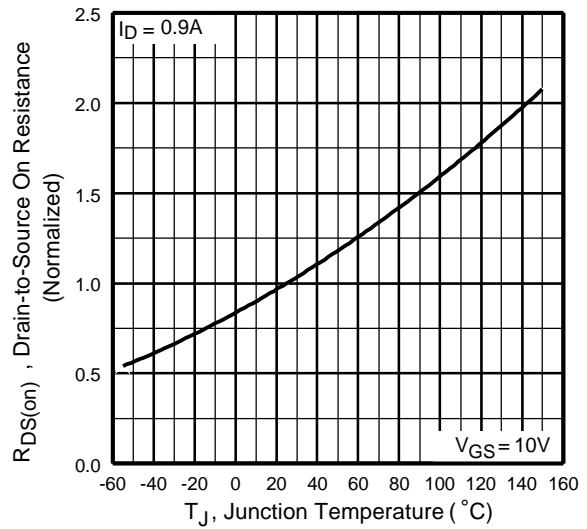


Fig 4. Normalized On-Resistance Vs. Temperature

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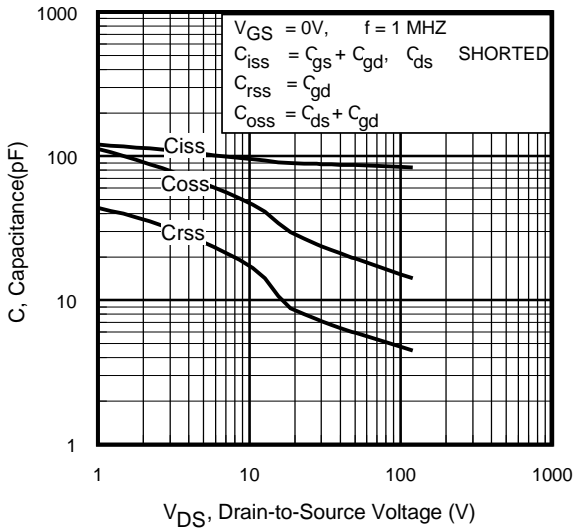


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

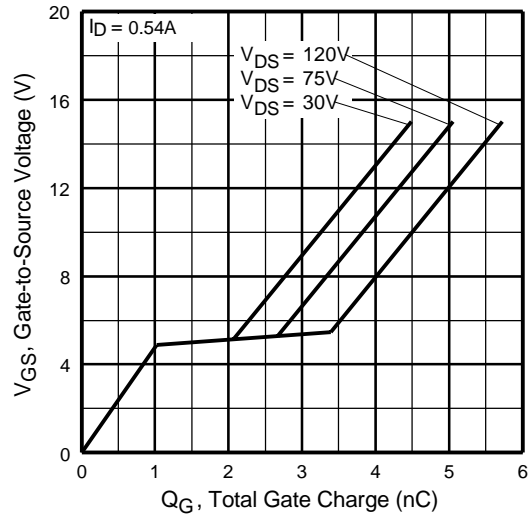


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

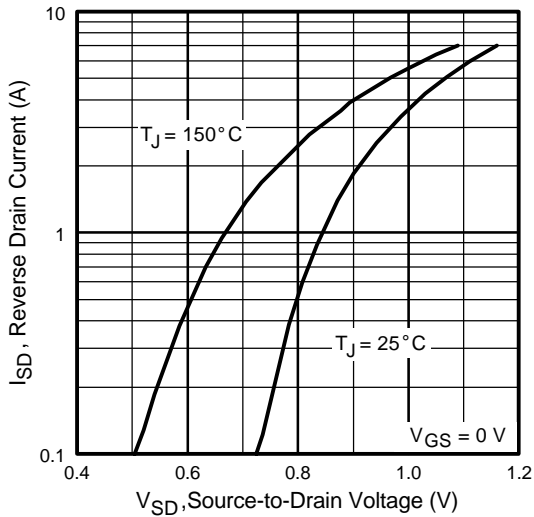


Fig 7. Typical Source-Drain Diode Forward Voltage

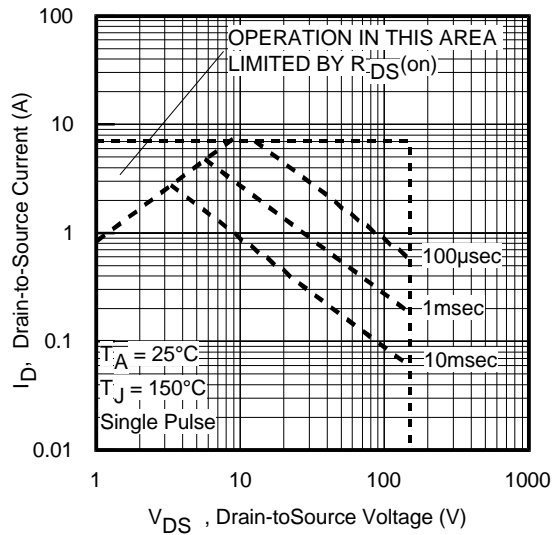


Fig 8. Maximum Safe Operating Area

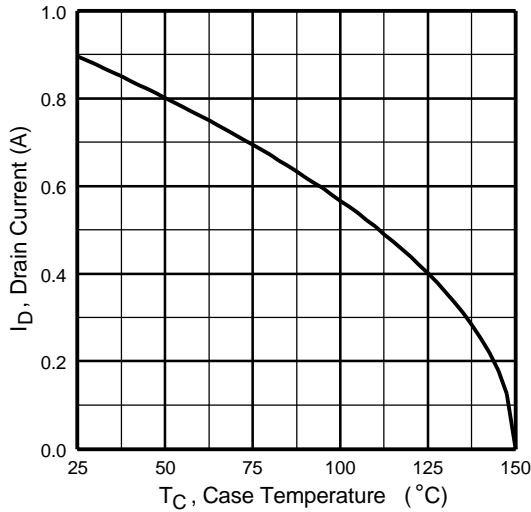


Fig 9. Maximum Drain Current Vs. Case Temperature

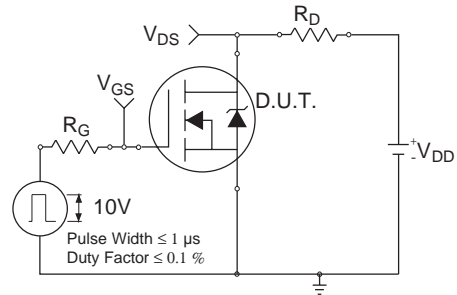


Fig 10a. Switching Time Test Circuit

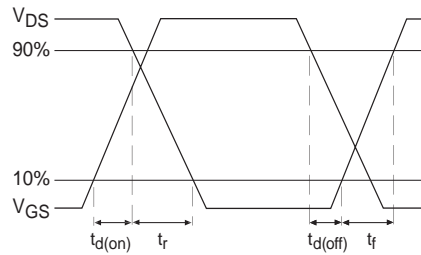


Fig 10b. Switching Time Waveforms

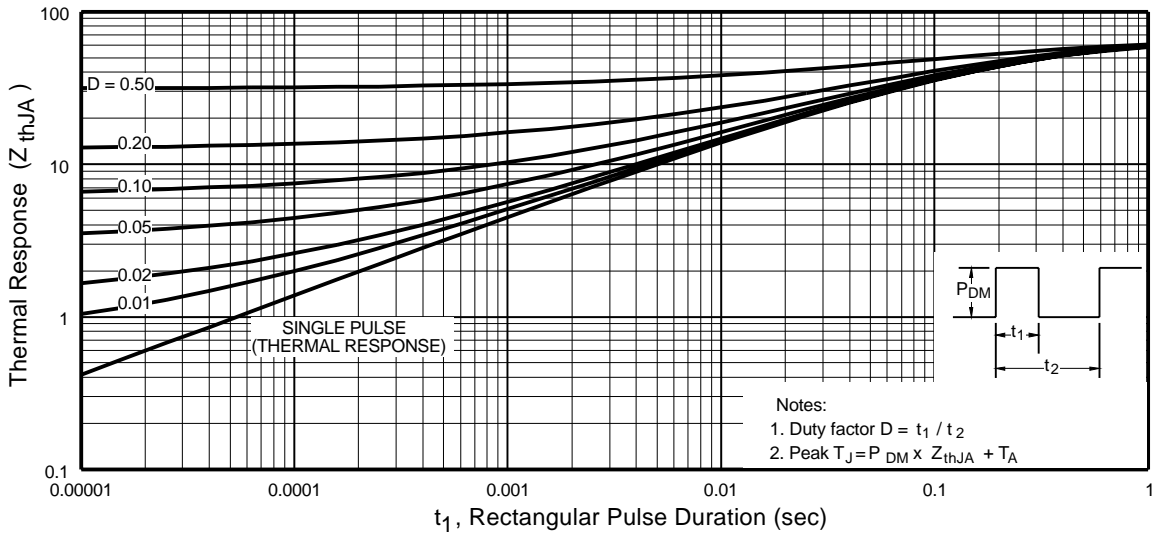


Fig 11. Typical Effective Transient Thermal Impedance, Junction-to-Ambient

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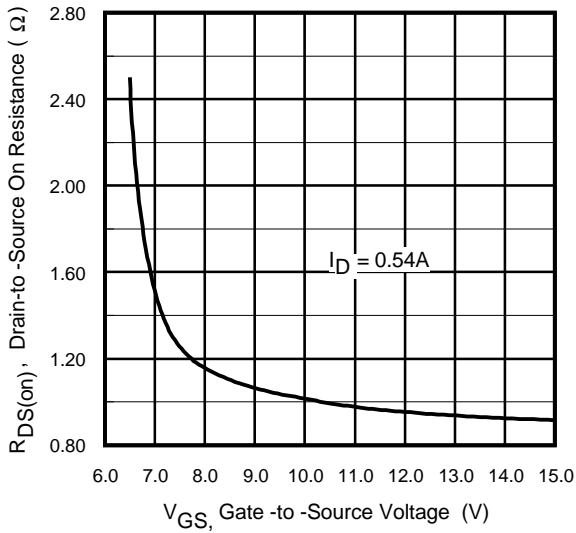


Fig 12. Typical On-Resistance Vs. Gate Voltage

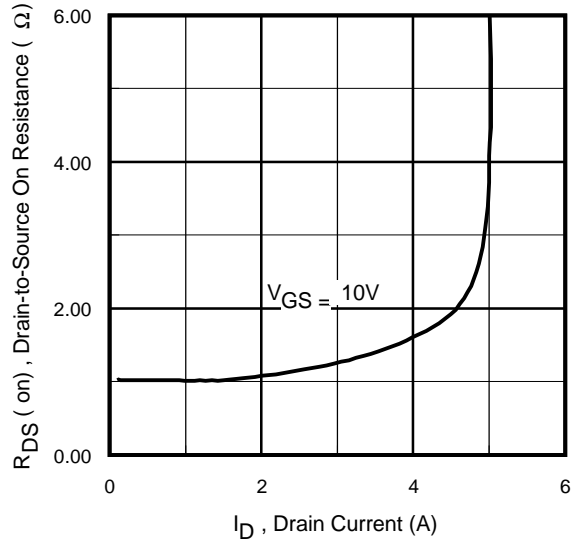


Fig 13. Typical On-Resistance Vs. Drain Current

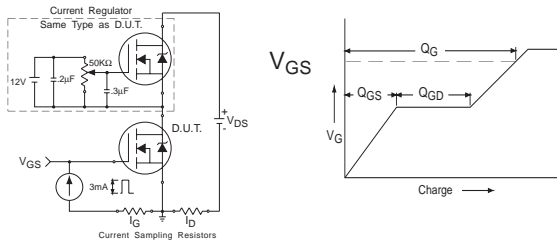


Fig 14a&b. Basic Gate Charge Test Circuit and Waveform

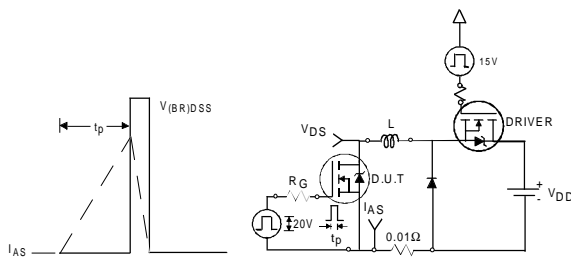


Fig 15a&b. Unclamped Inductive Test circuit and Waveforms

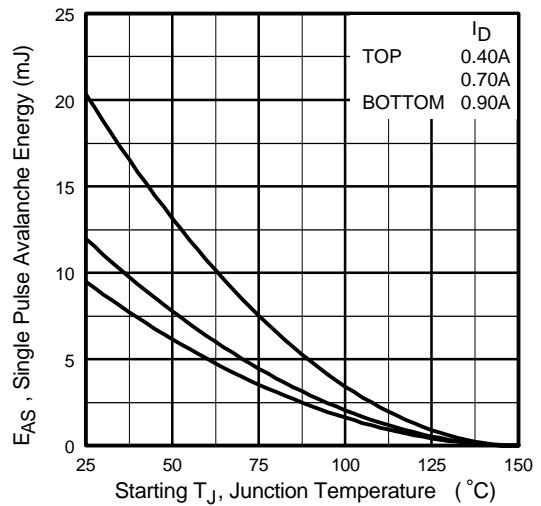
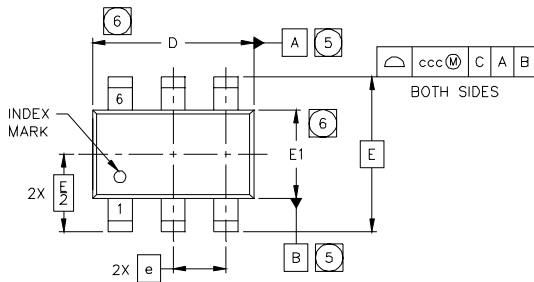


Fig 15c. Maximum Avalanche Energy Vs. Drain Current

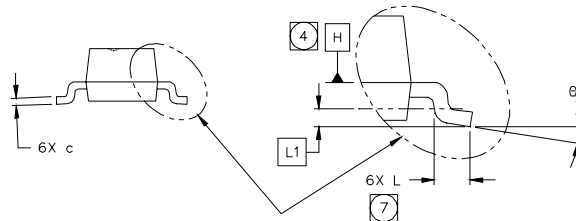
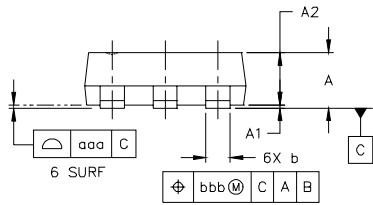
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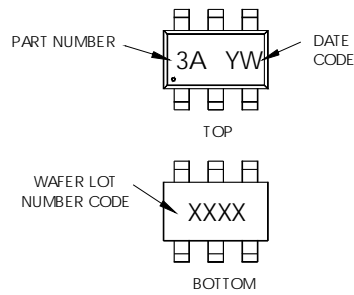
SYMBOL	MO-193AA DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	---	---	1.10	---	---	.0433
A1	0.01	---	0.10	.0004	---	.0039
A2	0.80	0.90	1.00	.0315	.0354	.0393
b	0.25	---	0.50	.0099	---	.0196
c	0.10	---	0.26	.004	---	.010
D	2.90	3.00	3.10	.115	.118	.122
E	2.75 BSC			.108 BSC		
E1	1.30	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		
θ	0°	---	8°	0°	---	8°
aaa	0.10			.004		
bbb	0.15			.006		
ccc	0.25			.010		



TSOP-6 Part Marking Information

EXAMPLE: THIS IS AN SI3443DV

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



YEAR	Y	WORK WEEK	W
2001	1	01	A
2002	2	02	B
2003	3	03	C
2004	4	04	D
2005	5		
1996	6		
1997	7		
1998	8		
1999	9		
2000	0	24	X
		25	Y
		26	Z

PART NUMBER CODE REFERENCE:

- 3A = SI3443DV
- 3B = IRF5800
- 3C = IRF5850
- 3D = IRF5851
- 3E = IRF5852
- 3I = IRF5805
- 3J = IRF5806

DATE CODE EXAMPLES:

- YWW = 9603 = 6C
- YWW = 9632 = FF

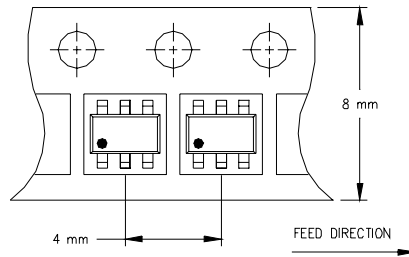
WW = (27-52) IF PRECEDED BY A LETTER

YEAR	Y	WORK WEEK	W
2001	A	27	A
2002	B	28	B
2003	C	29	C
2004	D	30	D
2005	E		
1996	F		
1997	G		
1998	H		
1999	J		
2000	K	50	X
		51	Y
		52	Z

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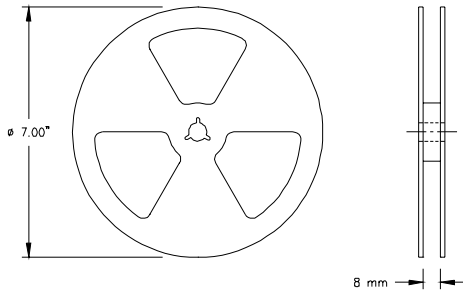


TSOP-6 Tape & Reel Information



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 industrial market.
Qualification Standards can be found on IR's Web site.



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