

## **Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			$V_{DSS}$	30	V
Gate-Source Voltage			$V_{GSS}$	±20	V
Continuous Drain Current (Note 6) V <sub>GS</sub> = 10V	Steady State	T <sub>A</sub> = +25°C	I <sub>D</sub>	4.5	А
		T <sub>A</sub> = +70°C		3.5	
	t<5s	T <sub>A</sub> = +25°C	· I <sub>D</sub>	5.8	А
		T <sub>A</sub> = +70°C		4.9	
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)			I <sub>DM</sub>	20	Α
Maximum Body Diode Forward Current (Note 6)			Is	2	А

## **Thermal Characteristics**

Characteristic		Symbol	Value	Unit
Total Bower Discinction (Note 5)	T <sub>A</sub> = +25°C	Pn	0.7	W
Total Power Dissipation (Note 5)	T <sub>A</sub> = +70°C	PD	0.44	
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	D	182	°C/W
Thermal Resistance, Junction to Ambient (Note 5)	t < 5s	$R_{\theta JA}$	109	
Total Power Dissipation (Note 6)	$T_A = +25^{\circ}C$	Pn	1.4	W
Total Fowel Dissipation (Note o)	T <sub>A</sub> = +70°C	PD	0.85	
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	D	94	°C/W
Thermal Resistance, Junction to Ambient (Note 6)	t < 5s	$R_{\theta JA}$	56	
Thermal Resistance, Junction to Case (Note 6)		$R_{\theta JC}$	25	
Operating and Storage Temperature Range		T <sub>J,</sub> T <sub>STG</sub>	-55 to +150	°C

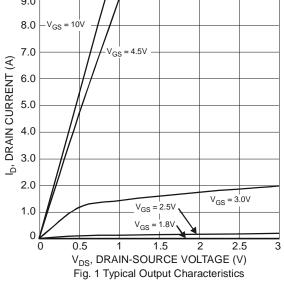
## **Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

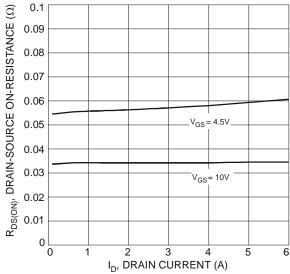
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 7)			•			•	
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	_	_	V	$V_{GS} = 0V, I_D = 250\mu A$	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>		_	800	nA	V <sub>DS</sub> = 28V, V <sub>GS</sub> = 0V	
Gate-Body Leakage	lass	_	_	±80	nA	$V_{GS} = \pm 12V, V_{DS} = 0V$	
Gale-bouy Leakage	I <sub>GSS</sub>			±800		V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V	
ON CHARACTERISTICS (Note 7)							
Gate Threshold Voltage	V <sub>GS(TH)</sub>	1.3	1.9	2.2	V	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	
Static Drain Source On Resistance	0	_	33	38	mΩ	$V_{GS} = 10V, I_D = 5.8A$	
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>		54	64		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 5.0A	
Forward Transconductance	Y <sub>fs</sub>	_	5	_	S	V <sub>DS</sub> = 5V, I <sub>D</sub> = 3.1A	
Source-Drain Diode Forward Voltage	$V_{SD}$	_	0.78	1.16	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 2.0A	
DYNAMIC CHARACTERISTICS (Note 8)							
Input Capacitance	C <sub>iss</sub>	_	424	_	pF	V <sub>DS</sub> = 5V, V <sub>GS</sub> = 0V f = 1.0MHz	
Output Capacitance	Coss	_	115	_	pF		
Reverse Transfer Capacitance	C <sub>rss</sub>	_	81	_	pF		
Gate Resistance	R <sub>g</sub>	_	1.51	_	Ω	$V_{DS} = 0V$ , $V_{GS} = 0V$ , $f = 1MHz$	
Total Gate Charge	Qg	_	9.0	_	nC		
Gate-Source Charge	Q <sub>gs</sub>	_	1.3	_	nC	$V_{GS} = 10V, V_{DS} = 15V, I_D = 5.8A$	
Gate-Drain Charge	$Q_{gd}$	_	1.3	_	nC		
Turn-On Delay Time	t <sub>D(ON)</sub>	_	3.4	_	ns		
Turn-On Rise Time	t <sub>R</sub>		6.2	_	ns	V <sub>DD</sub> = 15V, V <sub>GS</sub> = 10V,	
Turn-Off Delay Time	t <sub>D(OFF)</sub>		13.9	_	ns	$R_L = 2.6\Omega$ , $R_g = 3\Omega$	
Turn-Off Fall Time	t <sub>F</sub>	_	2.8	_	ns	7	

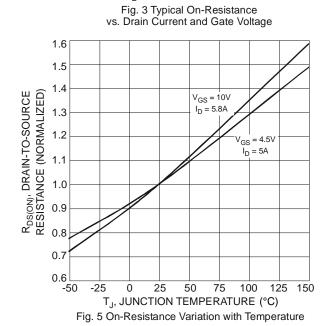
Notes:

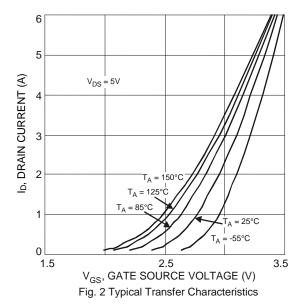
- 5. Device mounted on FR-4 PCB with minimum recommended pad layout, single sided.
  6. Device mounted on 1" x 1" FR-4 PCB with high coverage 2 oz. Copper, single sided.
  7. Short duration pulse test used to minimize self-heating effect.
  8. Guaranteed by design. Not subject to production testing.

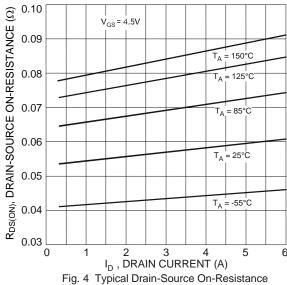












Vs. Drain Current and Temperature

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VDS, DRAIN-SOURCE VOLTAGE (V)
Fig. 6 Typical Capacitance



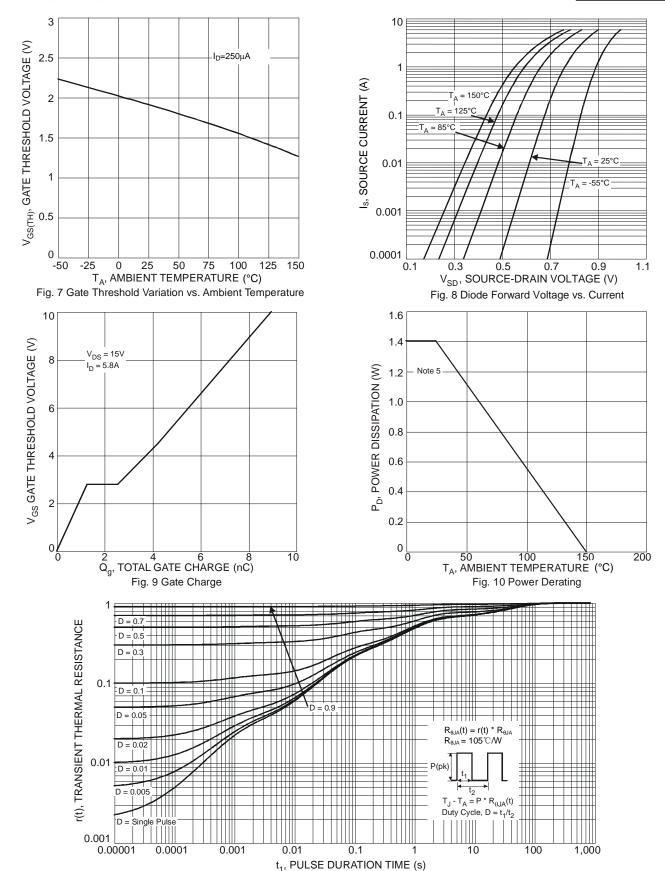
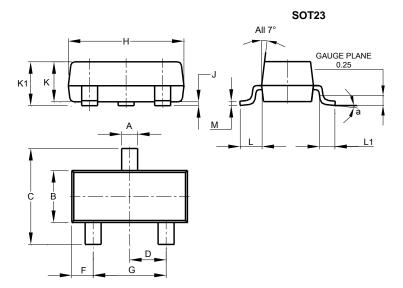


Fig. 11 Transient Thermal Response



## **Package Outline Dimensions**

Please see http://www.diodes.com/package-outlines.html for the latest version.

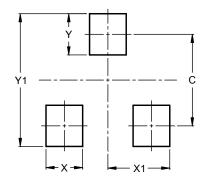


SOT23					
Dim	Min	Max	Тур		
Α	0.37	0.51	0.40		
В	1.20	1.40	1.30		
C	2.30	2.50	2.40		
D	0.89	1.03	0.915		
F	0.45	0.60	0.535		
G	1.78	2.05	1.83		
Н	2.80	3.00	2.90		
7	0.013	0.10	0.05		
K	0.890	1.00	0.975		
K1	0.903	1.10	1.025		
L	0.45	0.61	0.55		
L1	0.25	0.55	0.40		
М	0.085	0.150	0.110		
а	0°	8°			
All Dimensions in mm					

# Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

### SOT23



Dimensions	Value (in mm)
С	2.0
Х	0.8
X1	1.35
Υ	0.9
Y1	2.9



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