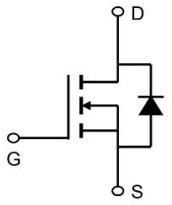
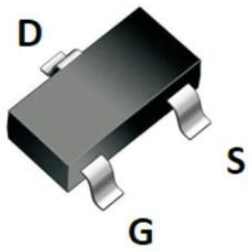
60V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	3A
V_{DS}	60V
R_{DSON}-typ(@V_{GS}=10V)	＜80mΩ(Typ:60 mΩ)
R_{DSON}-typ(@V_{GS}=4.5V)	＜95mΩ(Typ:70 mΩ)





SOT-23

Marking Code	
YFW3N06	6003

FEATURES

- TrenchFET Power MOSFET
- High Speed switching
- Halogen Free MSL1
- Epoxy Meets UL 94 V-0 Flammability Rating.

Mechanical Data

- SOT-23 Small Outline Plastic Package.
- Epoxy UL: 94V-0.
- Mounting Position: Any.

Maximum Ratings & Thermal Characteristics

(Ratings at 25°C ambient temperature unless otherwise specified.)

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	60	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current T_A=25℃	I_D	3.0	A
Continuous Drain Current T_A=100℃	I_D	1.9	A
Pulsed Drain Current [1]	I_{DM}	20	A
Total Power Dissipation [2] T_A=25℃	P_D	1200	mW
Total Power Dissipation [2] T_A=100℃		450	mW
Operating Junction Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	105	°C/W

Electrical Characteristics

(Ratings at 25°C ambient temperature unless otherwise specified).

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	BV_{DSS}	60	-	-	V
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	$V_{GS(th)}$	0.9	1.3	2.0	V
Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Drain -Source Leakage Current	V_{DS}=60V, V_{GS}=0V	I_{DSS}	-	-	1	μA
Static Drain-Source On-Resistance	V_{GS}=10V, I_D=3A	$R_{DS(ON)}$	-	60	80	mΩ
	V_{GS}=4.5V, I_D=2A		-	70	95	
Gate resistance	f=1MHz, Open drain	R_G	-	2.8	-	Ω
Total Gate Charge(4.5V)	V_{GS}=10V V_{DS}=30V I_D=3A	Q_g	-	8.8	-	nC
Gate-Source Charge		Q_{gs}	-	1	-	
Gate-Drain Charge		Q_{gd}	-	2.5	-	
Turn-on delay time	V_{DD}=30V V_{GS}=10V R_G=2.3Ω I_D=3A	$t_{d(on)}$	-	4.5	-	ns
Rise Time		T_r	-	10	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	12.5	-	
Fall Time		t_f	-	1.5	-	
Input Capacitance	V_{DS}=30V V_{GS}=0V f=1.0MHz	C_{iss}	-	400	-	pF
Output Capacitance		C_{oss}	-	28	-	
Reverse Transfer Capacitance		C_{rss}	-	23	-	
Maximum Body-Diode Continuous Current		I_S	-	-	3.0	A
Diode Forward Voltage	I_S=3A , V_{GS}=0V	V_{SD}	-	0.85	1.2	V
Reverse Recovery Time	I_F=3A, dI / dt = 500 A/μs	trr	-	12	-	ns
Reverse Recovery Charge		Qrr	-	24	-	nC

Notes:
1. Repetitive rating; pulse width limited by max. junction temperature.
2. Pd is based on max. junction temperature, using junction-case thermal resistance.
3. The value of $R_{\theta JA}$ is measured with the device mounted on the minimum recommend pad size, in the still air environment with TA =25°C.The maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.

Ratings and Characteristic Curves

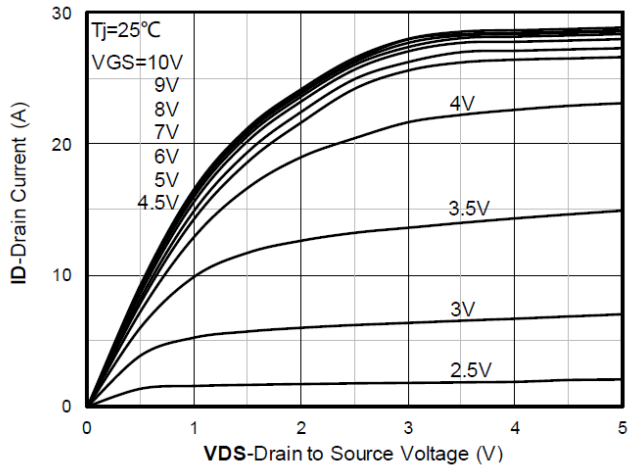


Figure 1. Output Characteristics

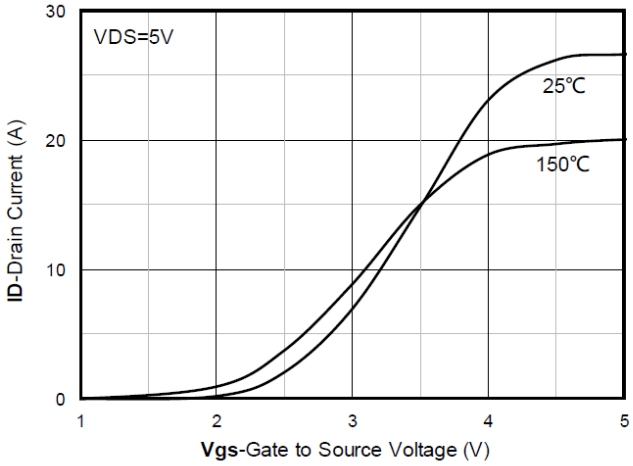


Figure 2. Transfer Characteristics

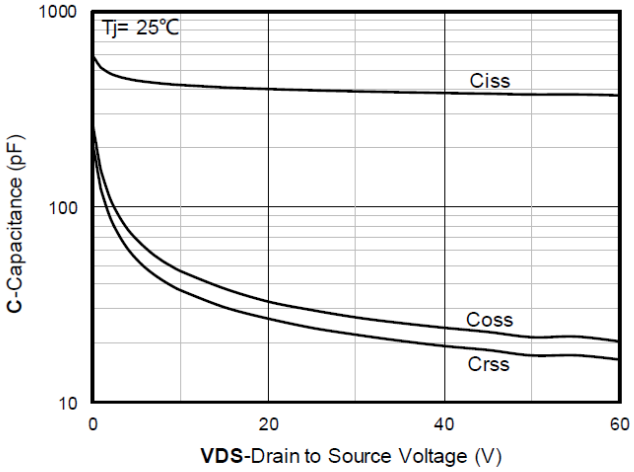


Figure 3. Capacitance Characteristics

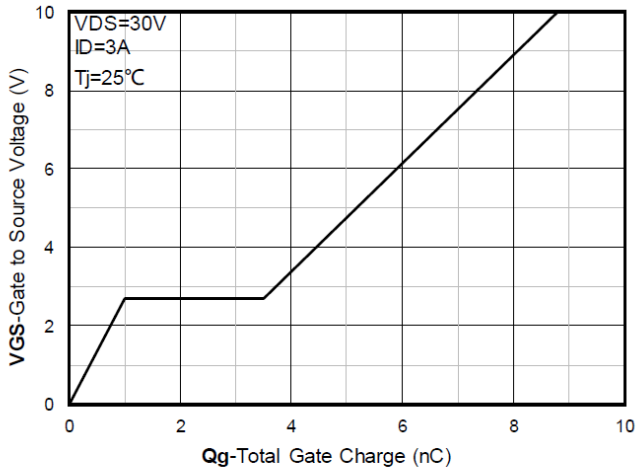


Figure 4. Gate Charge

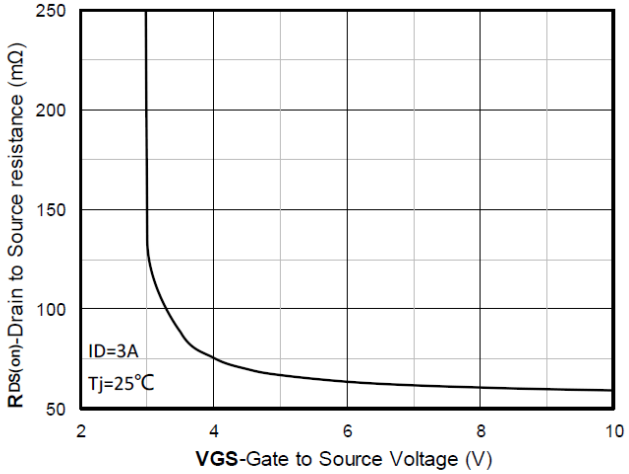


Figure 5. On-Resistance vs Gate to Source Voltage

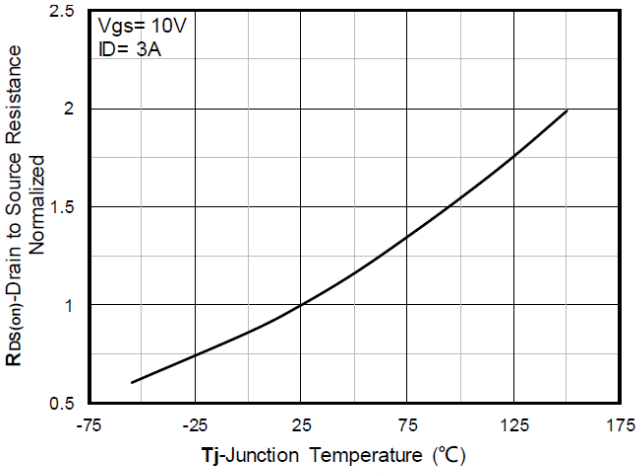


Figure 6. Normalized On-Resistance

Typical Characteristics

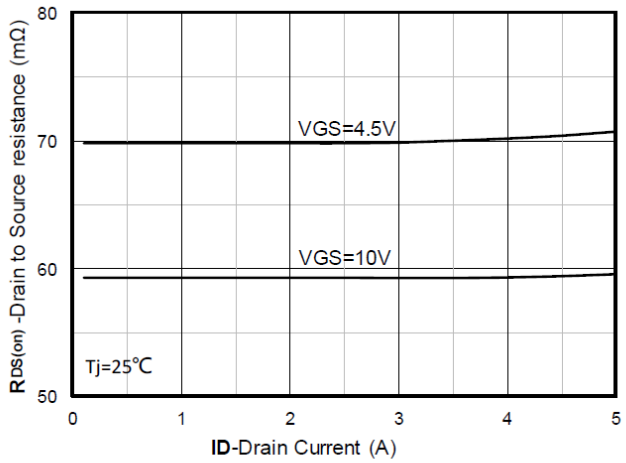


Figure 7. $R_{DS(on)}$ VS Drain Current

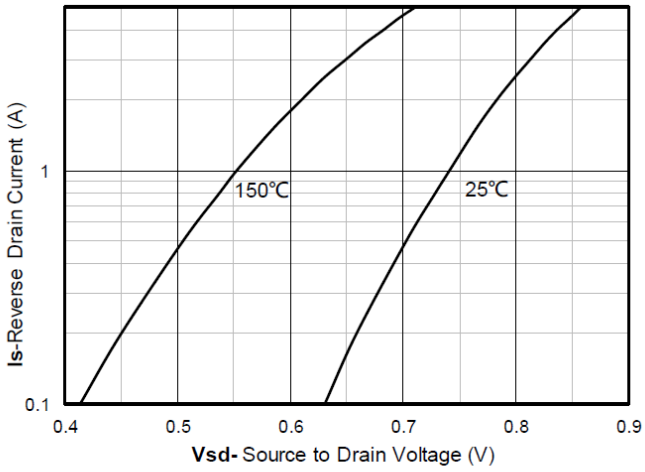


Figure 8. Forward characteristics of reverse diode

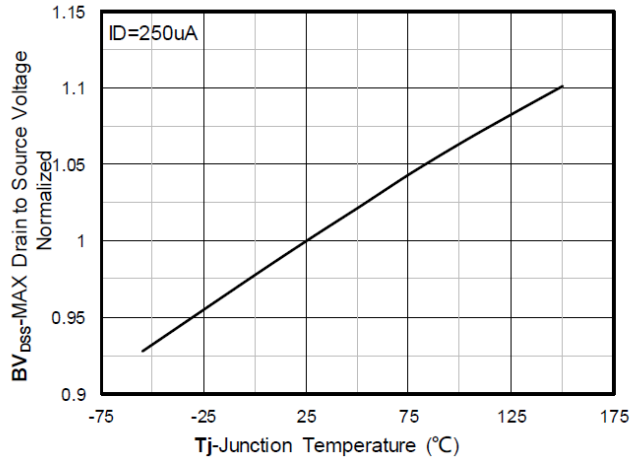


Figure 9. Normalized breakdown voltage

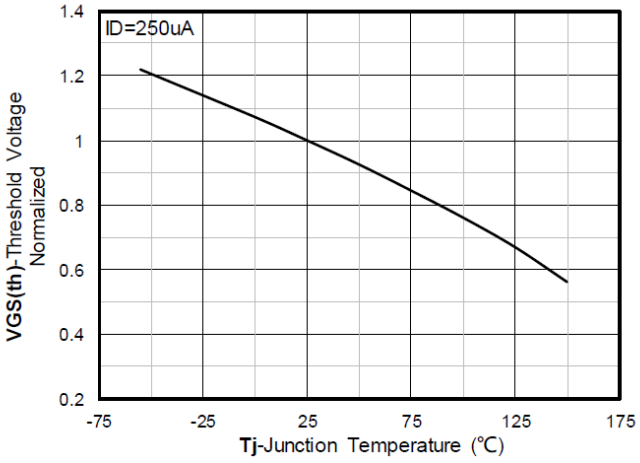


Figure 10. Normalized Threshold voltage

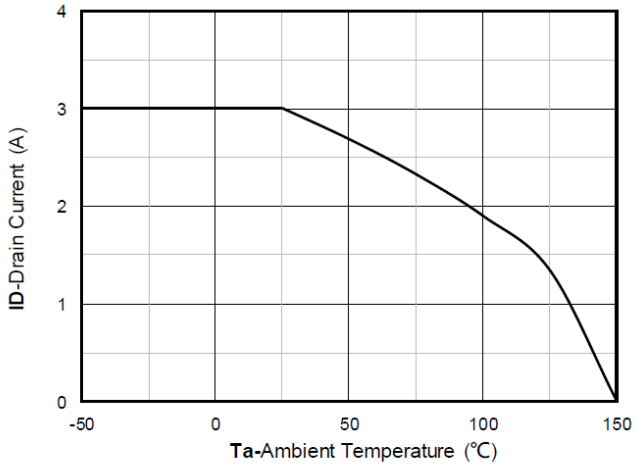


Figure 11. Current dissipation

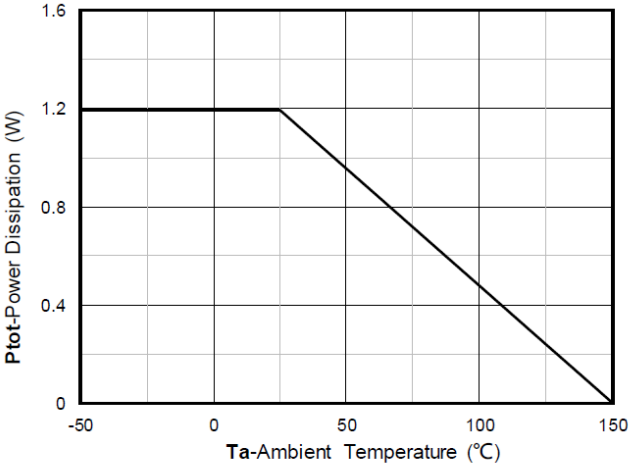


Figure 12. Power dissipation

Typical Characteristics

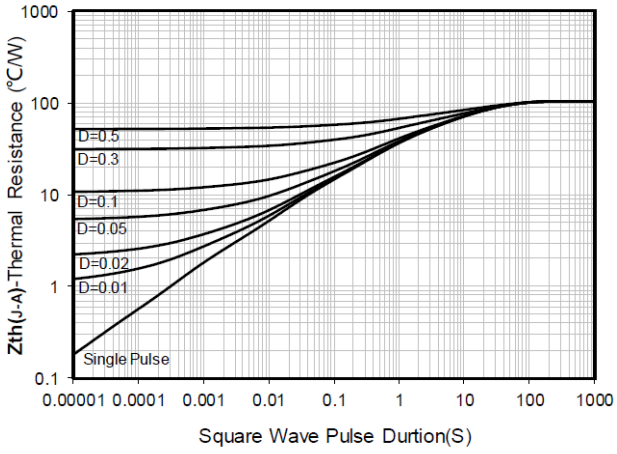


Figure 13. Maximum Transient Thermal Impedance

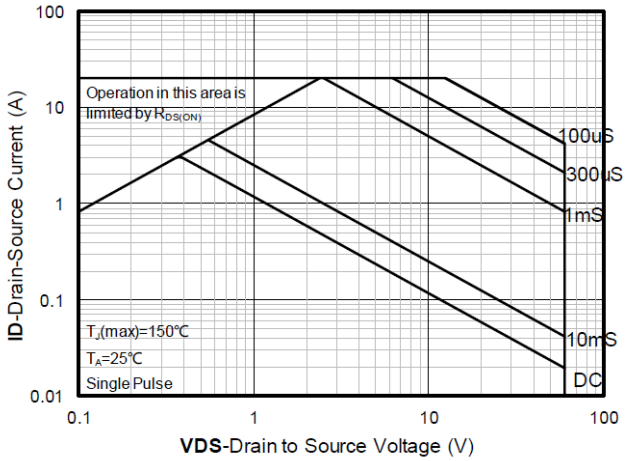


Figure 14. Safe Operation Area

Test Circuits & Waveforms

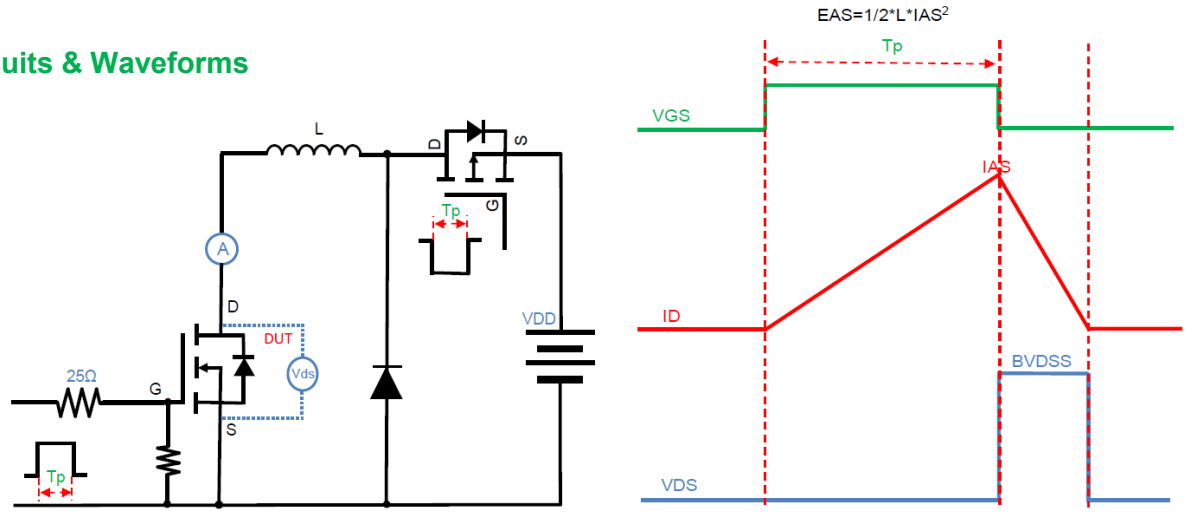


Figure A. Unclamped Inductive Switching (UIS) Test Circuit & Waveform

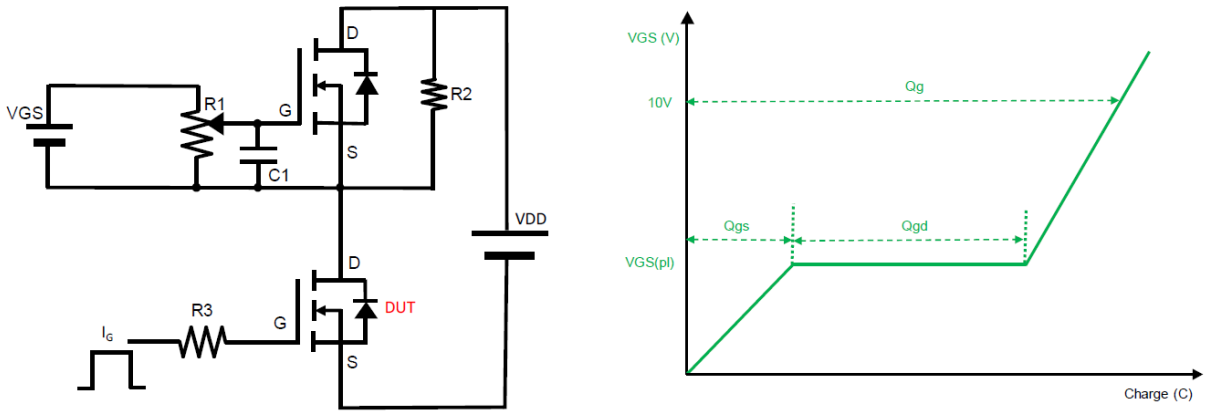


Figure B. Gate Charge Test Circuit & Waveform

Test Circuits & Waveforms

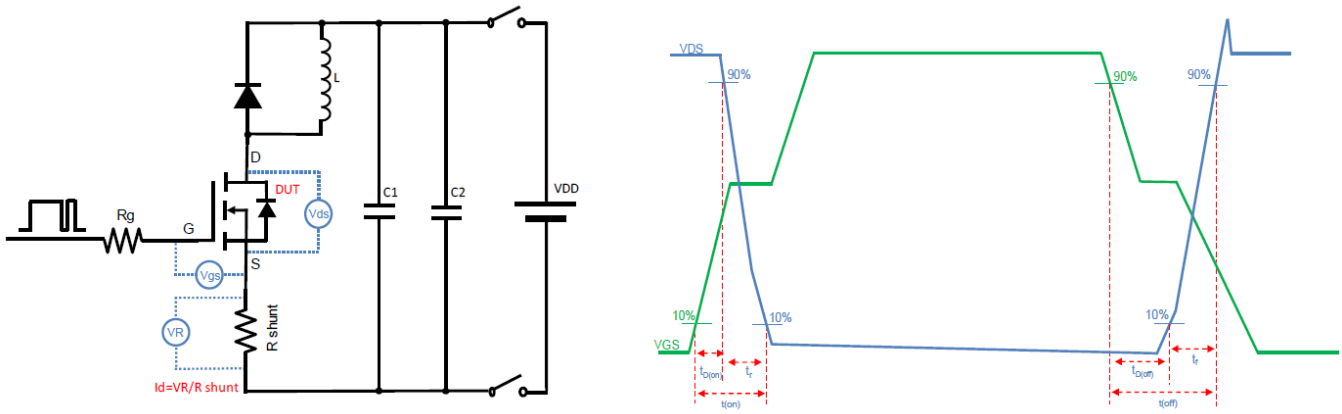


Figure C. Resistive Switching Test Circuit & Waveform

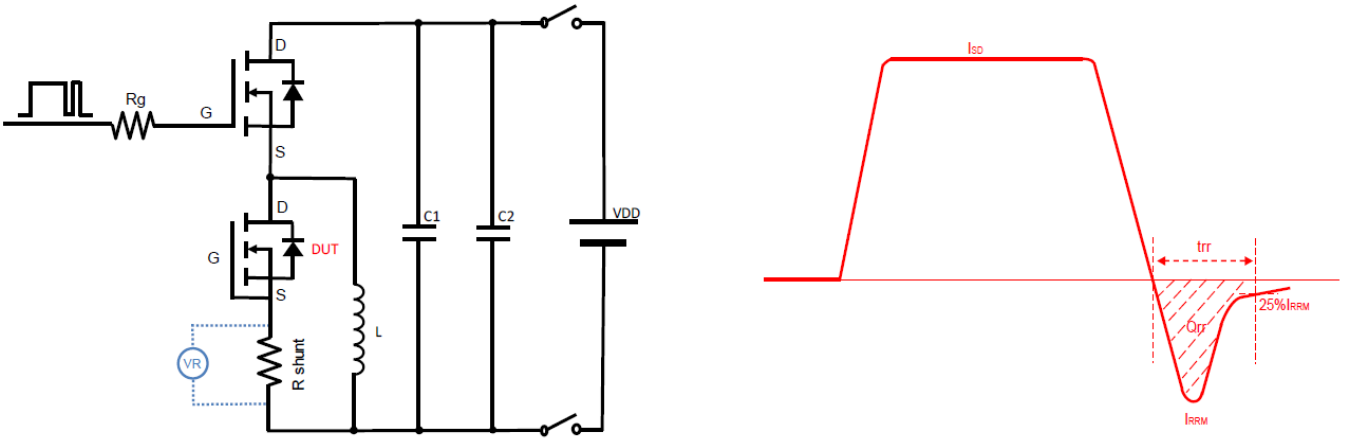


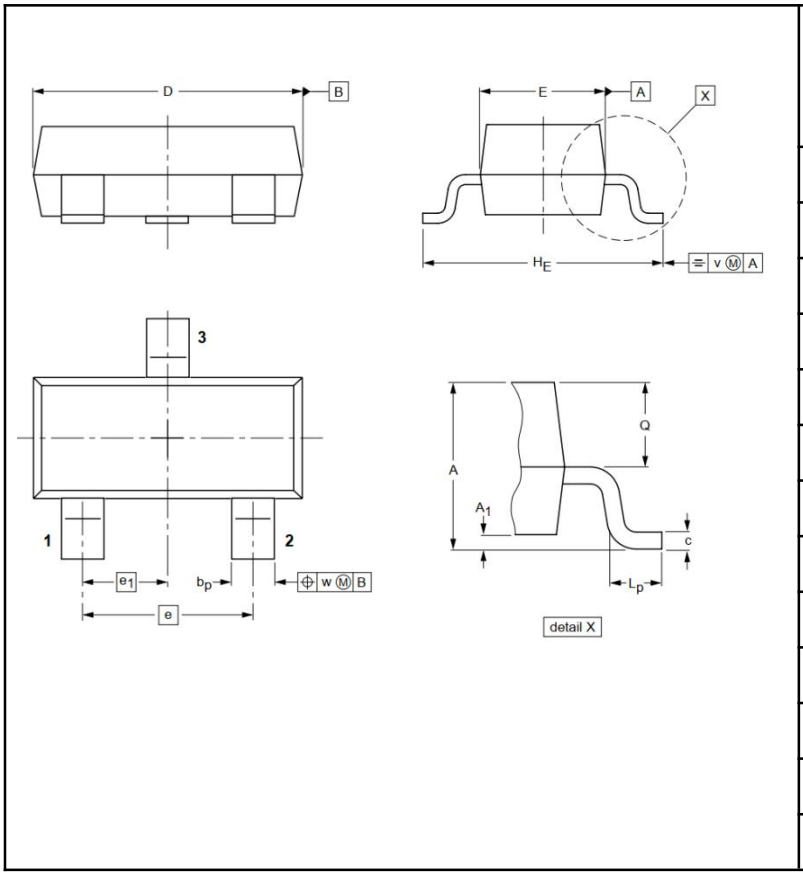
Figure D. Diode Recovery Test Circuit & Waveform

Ordering information

Package	Packing Description	Base Quantity	Packing Quantity
SOT-23	Tape/Reel,7"reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

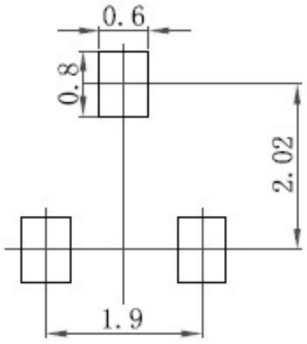
Package Dimensions

SOT-23



Dim.	Millimeter (mm)		mil	
	Min.	Max.	Min.	Max.
A	0.9	1.15	35	45
A1	0.1		3.9	
bp	0.38	0.48	15	19
C	0.09	0.15	3.54	5.9
D	2.8	3.0	110	118
E	1.2	1.4	47	55
e	1.9		75	
e1	0.95		37	
HE	2.1	2.55	83	100
Lp	0.15	0.45	5.9	18
Q	0.45	0.55	18	22
v	0.2		7.9	
W	0.1		4	

The recommended mounting pad size



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