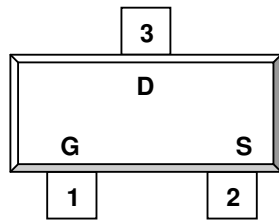
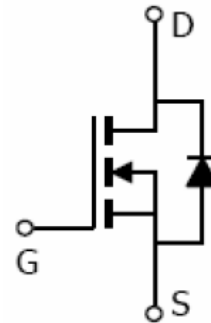
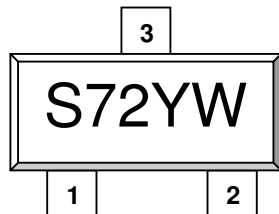


PIN CONFIGURATION
SOT-23


1.Gate 2.Source 3.Drain

FEATURE

- 60V/0.30A, $R_{DS(ON)} = 5\Omega$ @ $V_{GS} = 10V$ (Typ.)
- 60V/0.25A, $R_{DS(ON)} = 7\Omega$ @ $V_{GS} = 4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and Maximum DC current capability
- SOT-23 package design

PART MARKING
SOT-23


Y : Year Code W : Process Code

**2N7002**

N Channel Enhancement Mode MOSFET

300mA**ABSOLUTE MAXIMUM RATINGS** (Ta = 25°C Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V _{DSS}	60	V
Gate-Source Voltage		V _{GSS}	±20	V
Continuous Drain Current	T _J =150°C) T _A =25°C	I _D	0.3	A
Pulsed Drain Current		I _{DM}	1.0	A
Power Dissipation	T _A =25°C	P _D	0.35	W
Operation Junction Temperature		T _J	150	°C
Storage Temperature Range		T _{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient		R _{θJA}	375	°C/W


2N7002


N Channel Enhancement Mode MOSFET

300mA

ELECTRICAL CHARACTERISTICS (Ta = 25°C Unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V,I _D = 250uA	60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D = 250uA	0.8		2.5	V
Gate Leakage Current	I _{GSS}	V _{DS} =0V,V _{GS} =±12V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 45V,V _{GS} =0V			1	uA
		V _{DS} = 45V,V _{GS} =0V T _J =125℃			10	
On-State Drain Current On-State Drain Current (plsed)	I _{SD(on)} I _{SDM} (2)				0.35 1.4	A
Drain-source On-Resistance	R _{DS(on)}	V _{GS} =10.0V,I _D =0.50A V _{GS} =4.5V,I _D = 0.25A		2.50 3.30	6.0 7.0	Ω
Forward Transconductance	G _{fs} (1)	V _{DS} =10V,I _D = 0.5A		0.6		S
Diode Forward Voltage	V _{SD} (1)	I _S =0.12A,V _{GS} =0V		0.85	1.5	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =4.5V I _D ≡ 1.0A		1.4	2.0	nC
Gate-Source Charge	Q _{gs}			0.8		
Gate-Drain Charge	Q _{gd}			0.5		
Input Capacitance	C _{iss}	V _{DS} =25V, f=1MHz, V _{GS} =0		43		pF
Output Capacitance	C _{oss}			20		
Reverse Transfer Capacitance	C _{rss}			6		
Turn-On Time	t _{d(on)} tr	V _{DD} =30V I _D =0.5A V _{GS} =4.5V R _G =4.7Ω		6		nS
				15		
Turn-Off Time	t _{d(off)} tf			6	13	
				7	9	

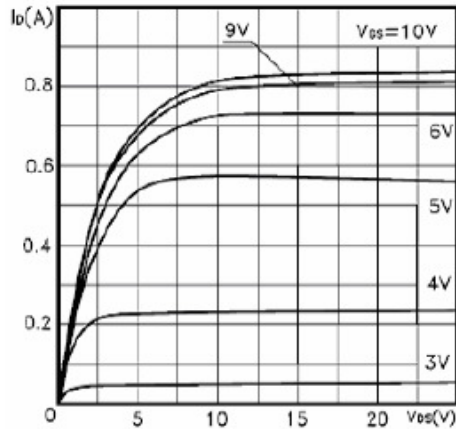


2N7002 

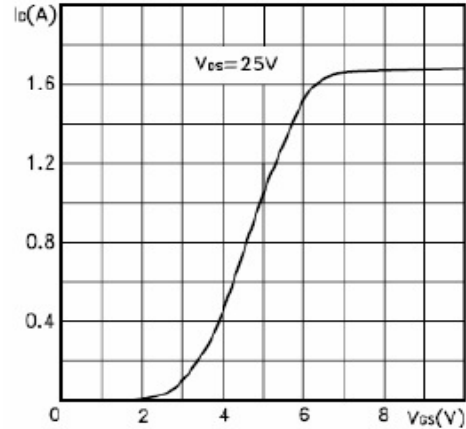
N Channel Enhancement Mode MOSFET

300mA

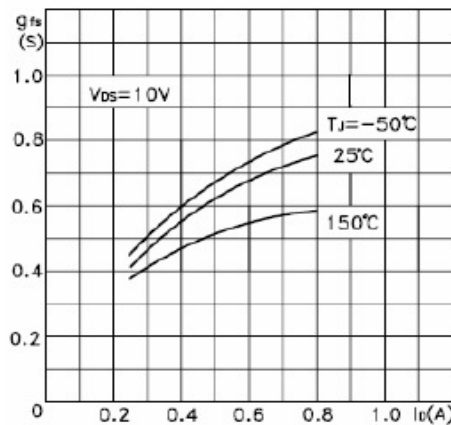
TYPICAL CHARACTERISTICS (25°C Unless noted)



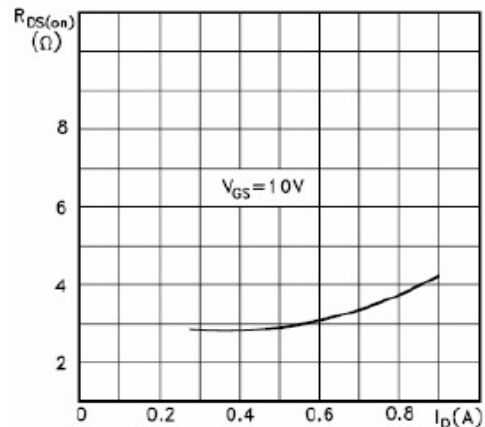
Output Characteristics



Transfer Characteristics



Transconductance



Static Drain-source On Resistance

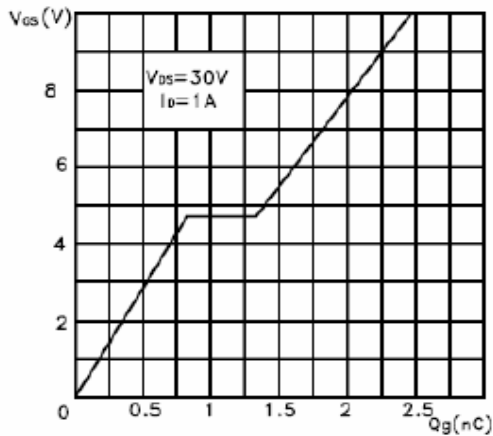


2N7002 

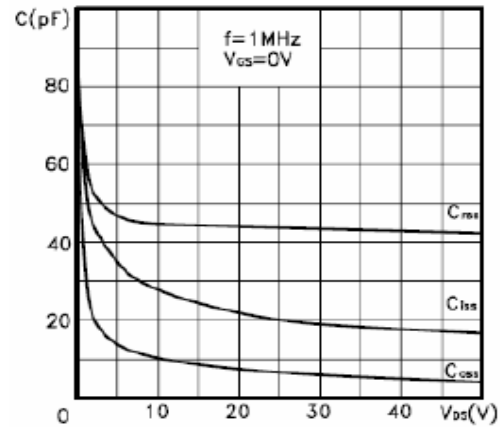
N Channel Enhancement Mode MOSFET

300mA

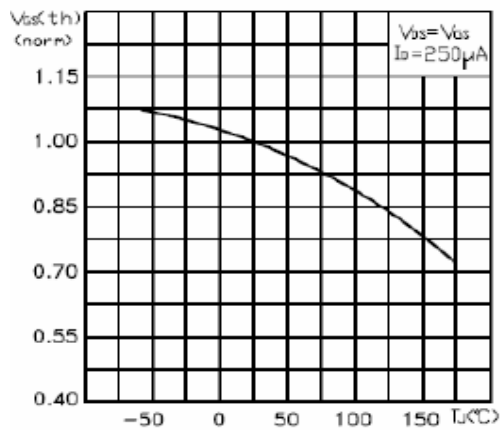
TYPICAL CHARACTERISTICS



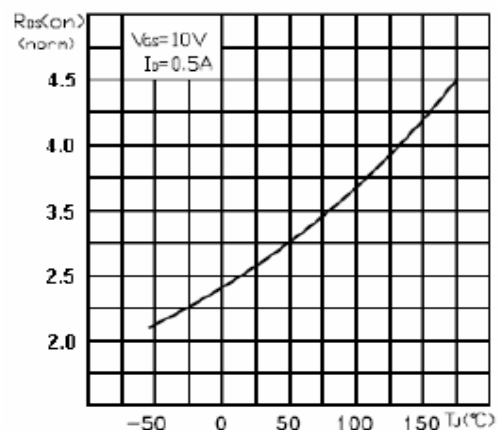
Gate Charge vs Gate-source Voltage



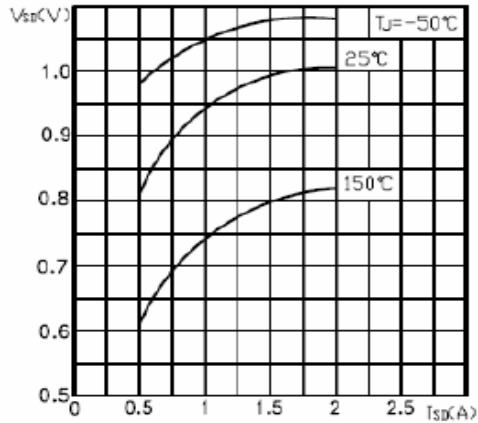
Capacitance Variations



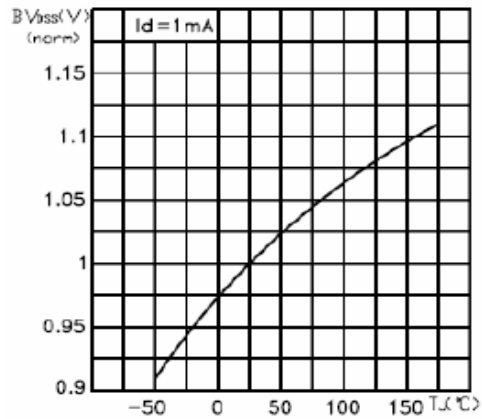
Normalized Gate Threshold Voltage
vs Temperature



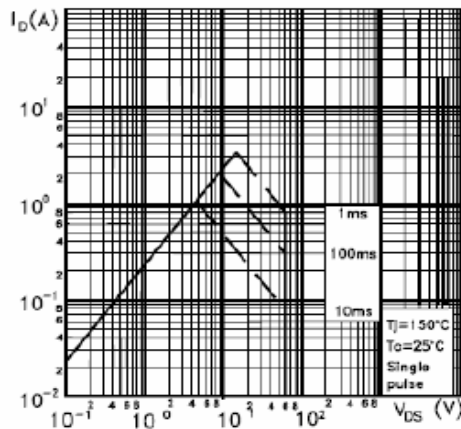
Normalized On Resistance
vs Temperature

TYPICAL CHARACTERISTICS


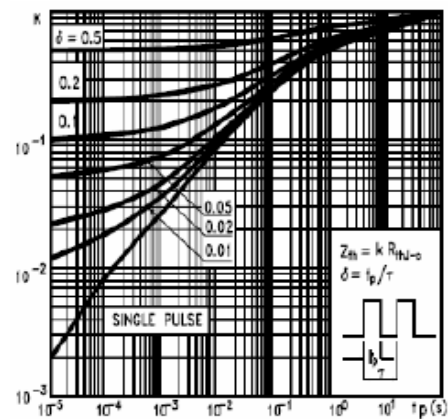
Source-Drain Forward



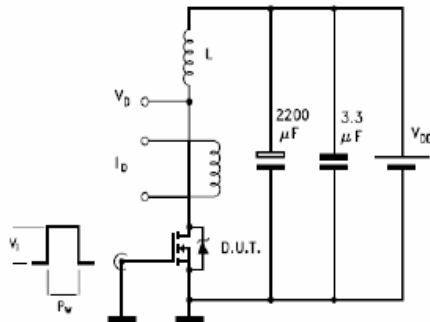
Normalized BVDSS vs Temperature



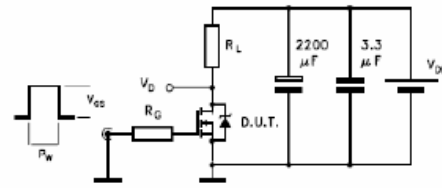
Safe Operating Area



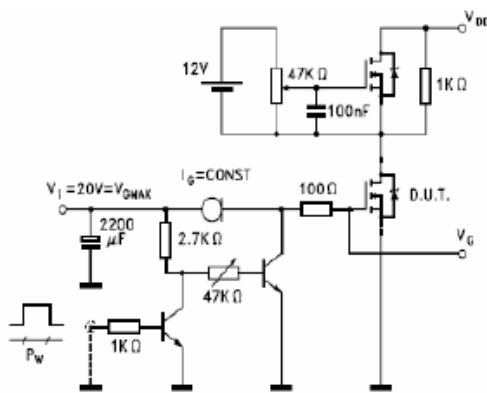
Thermal Impedance

TIPYCAL TESTING CIRCUIT


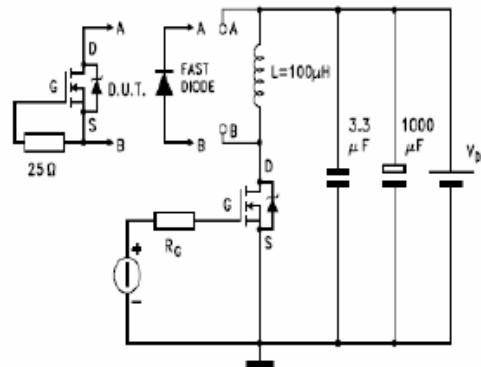
Unclamped Inductive Load Test



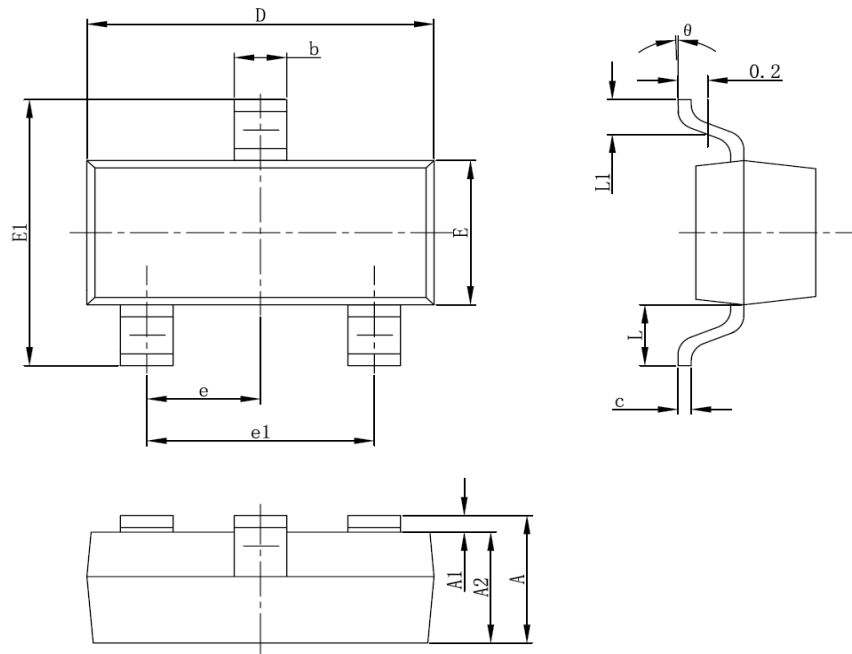
Switching Times Test Circuit



Gate Charge Test Circuit


Test Circuit For Inductive Load
Switching and Diode Recovery Times

SOT-23 PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
theta	0°	8°	0°	8°