

Descriptions

These N-channel MOSFET are produced using advanced plane MOSFET Technology, which provides Low on-state resistance, high switching performance and excellent quality. These devices are suitable device for SMPS, high Speed switching and general purpose applications.

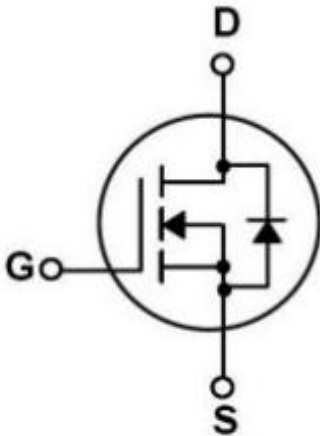
Features

- $V_{DS} = 500V$
- $I_D = 13A$ @ $V_{GS} = 10V$
- $R_{DS(ON)}$ (Typ) = 0.37Ω @ $V_{GS} = 10V$

Applications

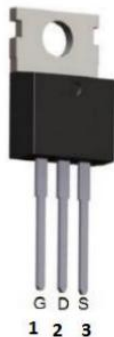
- Power Supply
- PFC
- High Current, High Speed Switching

Equivalent Circuit



Pinning

TO-220



PIN1:Gate PIN 2:Drain PIN 3:Source

Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	500	V
Drain Current	$I_D(T_C=25^{\circ}\text{C})$	13	A
	$I_D(T_C=100^{\circ}\text{C})$	8	A
Drain Current - Pulsed	I_{DM}	52	A
Gate-Source Voltage	V_{GS}	± 30	V
Single Pulsed Avalanche Energy	E_{AS}	860	mJ
Repetitive Avalanche Energy	E_{AR}	19.5	mJ
Avalanche Current	I_{AR}	13	A
Power Dissipation	$P_D(T_C=25^{\circ}\text{C})$	168	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^{\circ}\text{C}$
Junction to Ambient	$R_{\theta JA}$	62.5	$^{\circ}\text{C/W}$
Junction to Case	$R_{\theta JC}$	0.74	$^{\circ}\text{C/W}$

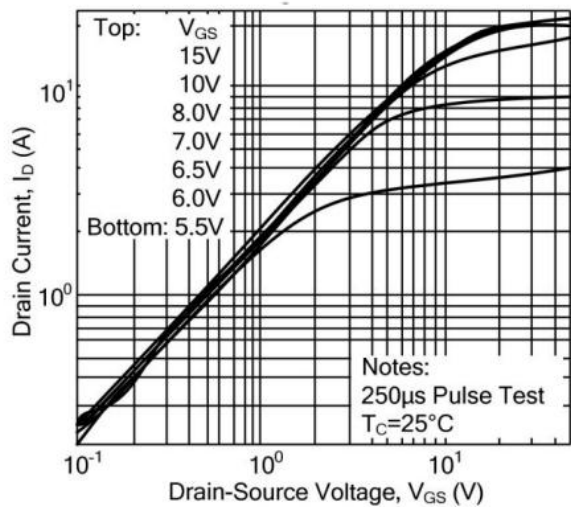
Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=250\mu A$	500			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=500V$ $V_{GS}=0V$			1.0	μA
		$V_{DS}=400V$ $T_C=125^{\circ}\text{C}$			10	μA
Gate-Body Leakage Current, Forward	I_{GSS}	$V_{GS}=\pm 30V$ $V_{DS}=0V$			± 0.1	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	2.0		4.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=6.5A$		0.37	0.48	Ω
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0\text{MHz}$		2000		pF
Output Capacitance	C_{oss}			270		
Reverse Transfer Capacitance	C_{rss}			10		
Total Gate Charge	Q_G	$V_{DS}=400V$, $I_D=13A$, $V_{GS}=10V$		62		nC
Gate-Source Charge	Q_{GS}			18		
Gate-Drain Charge	Q_{GD}			25		

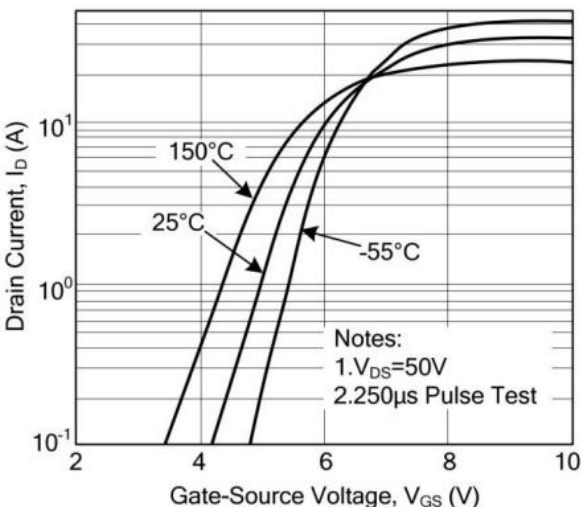
Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=250V$ $I_D=13A$ $R_G=25\Omega$		29		ns
Turn-On Rise Time	t_r			26		
Turn-Off Delay Time	$t_{d(off)}$			145		
Turn-Off Fall Time	t_f			38		
Maximum Continuous Drain-Source Diode Forward Current	I_S				13	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				52	A
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS} = 0V$, $I_S = 13A$			1.4	V
Reverse Recovery Time	t_{rr}	$V_{GS} = 0V$, $I_S = 13A$, $dI_F/dt = 100 A/\mu s$		385		nS
Reverse Recovery Charge	Q_{rr}			5550		nC

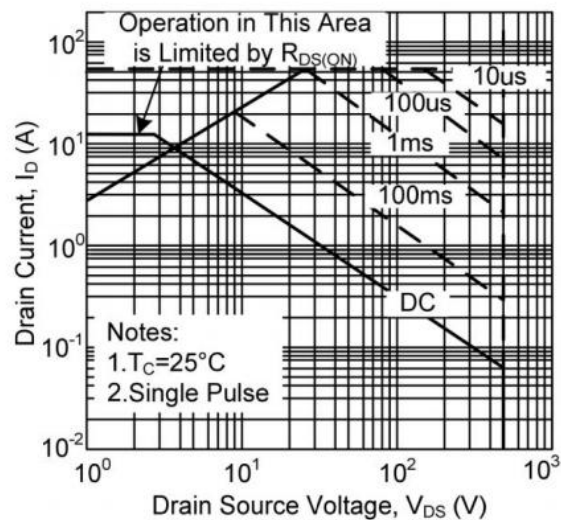
Electrical Characteristic Curve



1. On-Resign Characteristics

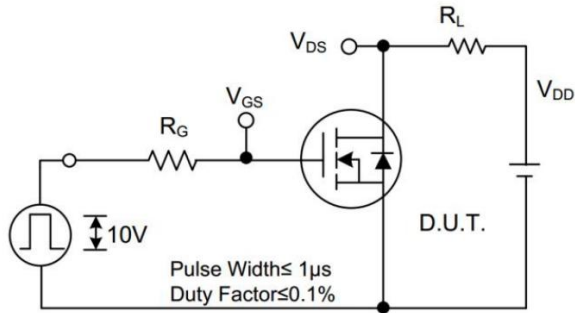


2. Transfer Characteristics

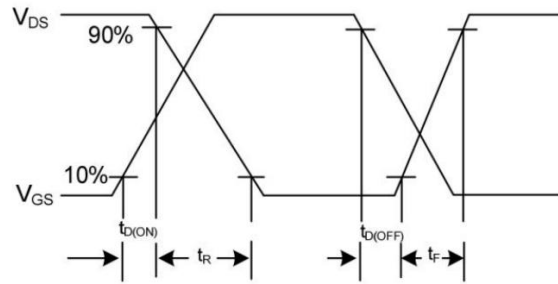


3. Maximum Safe Operating Area

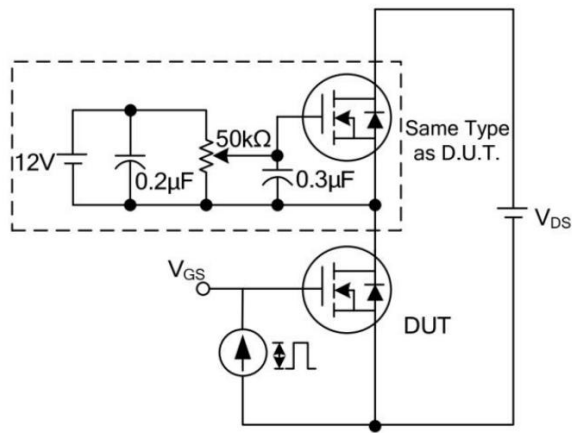
Test Circuits and Waveforms



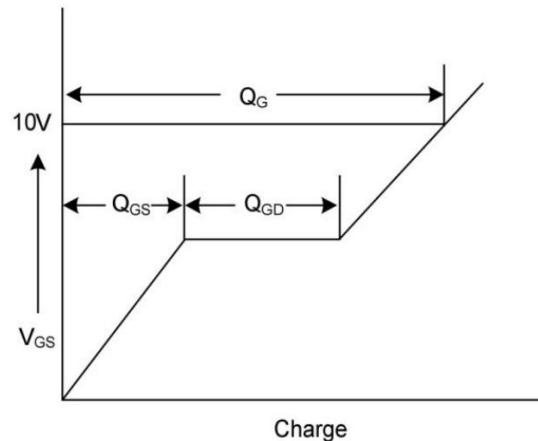
Switching Test Circuit



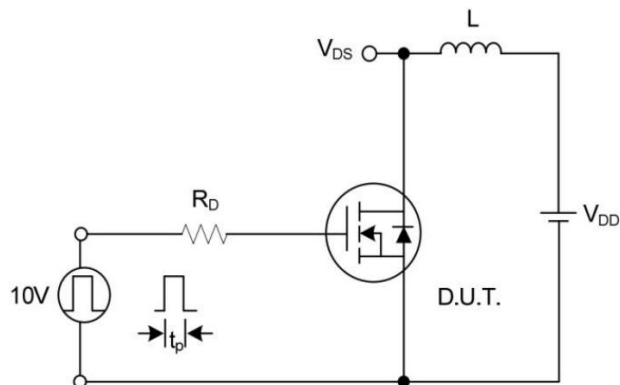
Switching Waveforms



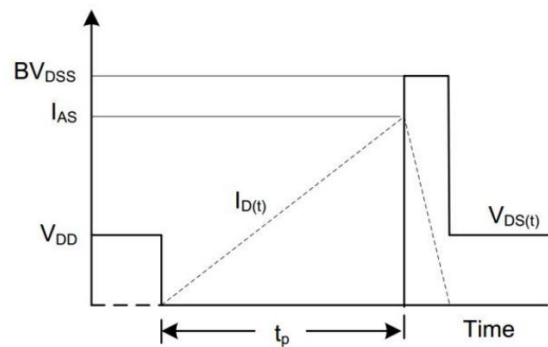
Gate Charge Test Circuit



Gate Charge Waveform

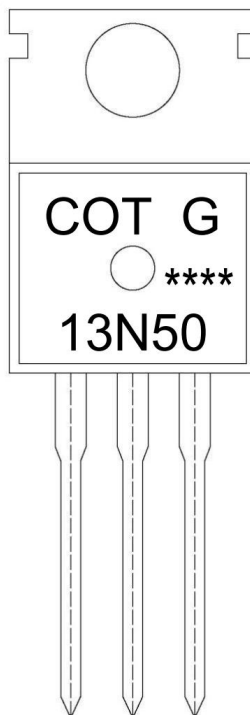


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

Marking Instructions



Note:

COT: Company Logo

G: Halogen Free

13N50: Product Type.

****: Lot No. Code, code change with Lot No.

Packaging SPEC.

REEL INFORMATION

Package Type	Units					Dimension (unit: mm ³)		
	Units/Bag	Bags/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Bag	Inner Box	Outer Box
TO-220	200	10	2,000	5	10,000	135×190	237×172×102	560×245×195

TUBE INFORMATION

Package Type	Units					Dimension (unit: mm ³)		
	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Tube	Inner Box	Outer Box
TO-220	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

Package Outline Dimensions

T0-220

单位: mm

