



50N06 N-Channel Power MOSFET

GENERAL DESCRIPTION

The 50N06 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

FEATURE

- High density cell design for ultra low R_{dson}
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Special process technology for high ESD capability

APPLICATION

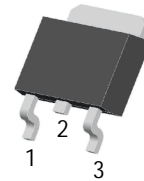
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Maximum ratings ($T_a=25^\circ\text{C}$ unless otherwise noted)

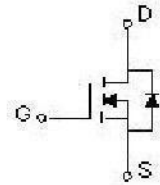
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	50	A
Pulsed Drain Current	I_{DM}	220	
Single Pulsed Avalanche Energy*	E_{AS}	115	mJ
Power Dissipation	P_D	1.25	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-50 ~ +150	

* E_{AS} condition: $T_J=25^\circ\text{C}$, $V_{DD}=50\text{V}$, $L=0.5\text{mH}$, $R_G=25\Omega$, Starting $T_J = 25^\circ\text{C}$

TO-252



1. GATE
2. DRAIN
3. SOURCE



Electrical characteristics (T_a=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	V _{(BR) DSS}	V _{GS} = 0V, I _D =250μA	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
On characteristics (note1)						
Gate-threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.5		2.5	V
Static drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		17	20	mΩ
Forward transconductance	g _{FS}	V _{DS} =25V, I _D =20A	24			S
Dynamic characteristics (note 2)						
Input capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =1MHz		900		pF
Output capacitance	C _{oss}			104		
Reverse transfer capacitance	C _{rss}			33		
Switching characteristics (note 2)						
Total gate charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =50A		30		nC
Gate-source charge	Q _{gs}			10		
Gate-drain charge	Q _{gd}			5		
Turn-on delay time	t _{d(on)}	V _{DD} =30V, I _D =2A, V _{GS} =10V, R _G =2.5Ω, R _L =15Ω		25		ns
Turn-on rise time	t _r			5		
Turn-off delay time	t _{d(off)}			50		
Turn-off fall time	t _f			6		
Drain-Source Diode Characteristics						
Drain-source diode forward voltage(note1)	V _{SD}	V _{GS} =0V, I _S =40A			1.2	V
Continuous drain-source diode forward current	I _S				50	A
Pulsed drain-source diode forward current	I _{SM}				220	A

Notes:

1. Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.
2. Guaranteed by design, not subject to production.

