



HIGH-VOLTAGE POWER MOSFETs

SiHG22N60S, SiHP22N60S, SiHB22N60S,
SiHF22N60S



New 600-V MOSFETs with Super Junction Technology

Super Junction Technology in TO-220, TO-247, TO-220F,
and TO-263 Packages

KEY BENEFITS

- Dramatic reduction of maximum $R_{DS(on)}$ at $V_{GS} = 10\text{ V}$: $0.190\ \Omega$
- Ultra-low gate charge: $Q_g = 98\text{ nC}$
- Increased efficiency for SMPS
- High E_{AR} capability
- Low figure-of-merit (FOM) $R_{on} \times Q_g$
- 100% avalanche tested
- High peak current capability
- dV/dt ruggedness
- Effective C_{OSS} specified
- Improved transconductance
- High power dissipation capability

APPLICATIONS

- Power factor correction (PFC) and pulse width modulation (PWM) in a wide range of electronics including:
 - LCD TVs
 - PCs
 - Servers
 - Switchmode power supplies (SMPS)
 - Telecom systems

Power MOSFETS

PRODUCT SUMMARY	
V_{DS} at $T_J, \text{max.}$ (V)	650
$V_{DS(on)}$ (Ω)	$V_{GS} = 10 \text{ V}$ 0.190
C_{Qj} (Max.) (nC)	98
Q_{gs} (nC)	17
Q_{gd} (nC)	25
Configuration	Single

FEATURES

- High E_{AS} Capability
- Lower Figure-of-Merit $R_{\theta(jc)} \times Q_g$
- 100 % Avalanche Tested
- High Peak Current Capability
- dV/dt Ruggedness
- Effective C_{oss} Specified
- Improved Transconductance
- Improved t_{rr}/Q_{rr}
- Improved Gate Charge
- High Power Dissipation Capability
- Compliant to RoHS Directive 2002/95/EC



TO-220

N-Channel MOSFET

ORDERING INFORMATION	
Package	TO-220
Lead (Pb)-free	SiHF22N60S-E3

TO-247

N-Channel MOSFET

ORDERING INFORMATION	
Package	TO-247
Lead (Pb)-free	SiHG22N60S-E3

TO-220 FULLPAK

N-Channel MOSFET

ORDERING INFORMATION	
Package	TO-220 FULLPAK
Lead (Pb)-free	SiHF22N60S-E3

D2PAK (TO-263)

N-Channel MOSFET

ORDERING INFORMATION	
Package	D ² PAK (TO-263)
Lead (Pb)-free	SiHB22N60S-E3

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^a	I_D	22	A
	I_{DM}	13	
Pulsed Drain Current ^b		65	
Linear Derating Factor		2	W/°C
Single Pulse Avalanche Energy ^c	E_{AS}	680	mJ
Repetitive Avalanche Energy ^b	E_{AR}	25	
Maximum Power Dissipation	P_D	250	W
Peak Diode Recovery dV/dt^d	dV/dt	7.3	V/ns
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	°C
Soldering Recommendations (Peak Temperature) ^e		300	

- Notes**
- Limited by maximum junction temperature.
 - Repetitive rating; pulse width limited by maximum junction temperature.
 - $V_{DS} = 50 \text{ V}$, starting $T_J = 25 \text{ °C}$, $L = 13.8 \text{ mH}$, $R_{\theta(jc)} = 25 \text{ °C/W}$, $I_{AS} = 10 \text{ A}$.
 - $I_{SP} \leq 22 \text{ A}$, $dI/dt \leq 340 \text{ A/}\mu\text{s}$, $V_{DS} \leq V_{GS}$, $T_J \leq 150 \text{ °C}$.
 - 1.6 mm from case.

Revision 10-Dec-09

* Pb containing terminations are not RoHS compliant, exemptions may apply

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