

## 80V N-Channel MOSFETs

### General Description

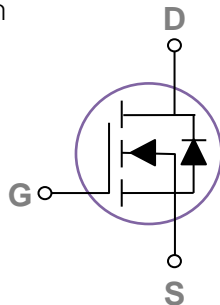
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

$BV_{DSS}$	$R_{DS(ON)Max.}$	$I_D$
80V	9.5m $\Omega$	80A

### Features

- 80V, 80A,  $R_{DS(ON)Max.} = 9.5m\Omega @ V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available

### TO-263 Pin Configuration



### Applications

- Networking
- Load Switch
- LED applications
- Quick Charger

### Absolute Maximum Ratings $T_c=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	80	V
$V_{GS}$	Gate-Source Voltage	$\pm 25$	V
$I_D$	Drain Current – Continuous ( $T_c=25^\circ\text{C}$ )	80	A
	Drain Current – Continuous ( $T_c=100^\circ\text{C}$ )	55	A
$I_{DM}$	Drain Current – Pulsed <sup>1</sup>	300	A
$E_{AS}$	Single Pulse Avalanche Energy <sup>2</sup>	210	mJ
$I_{AS}$	Single Pulse Avalanche Current <sup>2</sup>	64	A
$P_D$	Power Dissipation ( $T_c=25^\circ\text{C}$ )	170	W
$T_{STG}$	Storage Temperature Range	-50 to 150	$^\circ\text{C}$
$T_J$	Operating Junction Temperature Range	-50 to 150	$^\circ\text{C}$

Note 1: Exceed these limits to damage to the device.

Note 2: Exposure to absolute maximum rating conditions may affect device reliability.

Electrical Characteristics ( $T_J=25\text{ }^\circ\text{C}$ , unless otherwise noted)

## Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	80			V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ C$			1	$\mu A$
		$V_{DS}=80V, V_{GS}=0V, T_J=85^\circ C$			10	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=20V, V_{DS}=0V$			100	nA

## On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=20A$		8.3	9.5	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	2	3	4	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		-8			$mV/^\circ C$
$g_{fs}$	Forward Transconductance	$V_{DS}=5V, I_D=20A$		65		S

## Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$Q_g$	Total Gate Charge <sup>3, 4</sup>	$V_{DS}=80V, V_{GS}=10V, I_D=10A$		70		nC
$Q_{gs}$	Gate-Source Charge <sup>3, 4</sup>		13			
$Q_{gd}$	Gate-Drain Charge <sup>3, 4</sup>		15.2			
$T_{d(on)}$	Turn-On Delay Time <sup>3, 4</sup>	$V_{DD}=50V, V_{GS}=10V, R_G=6\Omega$ $I_D=1A$		22		ns
$T_r$	Rise Time <sup>3, 4</sup>		16			
$T_{d(off)}$	Turn-Off Delay Time <sup>3, 4</sup>		40			
$T_f$	Fall Time <sup>3, 4</sup>		18			
$C_{iss}$	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, F=1MHz$		2800		pF
$C_{oss}$	Output Capacitance		200			
$C_{rss}$	Reverse Transfer Capacitance		75			
$R_g$	Gate resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$		1.5		$\Omega$

## Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current	$V_G=V_D=0V, \text{ Force Current}$			80	A
$I_{SM}$	Pulsed Source Current				160	A
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$			1	V

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2.  $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=87A, R_G=25\Omega, \text{ Starting } T_J=25^\circ C$ .
3. The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$ .
4. Essentially independent of operating temperature.

**TO-263 PACKAGE INFORMATION**

