

### General Description

The 65R280Q is power MOSFET using Cmos's advanced super junction technology that can realize very low on resistance and gate charge. It will provide much high efficiency by using optimized charge coupling technology. These user friendly devices give an advantage of low EMI to designers as well as low switching loss.

### Features

- Fast switching
- 100% avalanche tested
- RoHS Compliant

### Product Summary

BVDSS	RDSON	ID
650V	0.28Ω	14A

### Applications

- Charger
- Adaptor
- Power Supply

### TO-252/TO-251 Pin Configuration



### Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	650	V
$V_{GS}$	Gate-Source Voltage	±30	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current	14	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current	9	A
$I_{DM}$	Pulsed Drain Current (Note 1)	56	A
EAS	Single Pulse Avalanche Energy (Note 2)	302	mJ
$P_D@T_C=25^{\circ}C$	Total Power Dissipation	105	W
$T_{STG}$	Storage Temperature Range	-55 to 150	°C
$T_J$	Operating Junction Temperature Range	150	°C

### Thermal Data

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient (Note 3, 4)	62	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case	1.2	°C/W

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V$ , $I_D=250\mu A$	650	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$ , $I_D=6A$	---	---	0.28	$\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$ , $I_D=250\mu A$	2	---	4	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=650V$ , $V_{GS}=0V$ , $T_J=25^{\circ}\text{C}$	---	---	1	$\mu A$
		$V_{DS}=650V$ , $V_{GS}=0V$ , $T_J=150^{\circ}\text{C}$	---	10	---	
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 30V$ , $V_{DS}=0V$	---	---	$\pm 100$	nA
$g_{fs}$	Forward Transconductance	$V_{DS}=10V$ , $I_D=6A$	---	11	---	S
$R_g$	Gate Resistance	$V_{DS}=0V$ , $V_{GS}=0V$ , $f=1\text{MHz}$	---	21	---	$\Omega$
$Q_g$	Total Gate Charge	$I_D=14A$	---	30	---	nC
$Q_{gs}$	Gate-Source Charge	$V_{DD}=520V$	---	7.1	---	
$Q_{gd}$	Gate-Drain Charge	$V_{GS}=10V$	---	10	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=325V$	---	25	---	ns
$T_r$	Rise Time	$V_{GS}=10V$	---	60	---	
$T_{d(off)}$	Turn-Off Delay Time	$I_D=14A$	---	150	---	
$T_f$	Fall Time	$R_G=25\Omega$	---	52	---	
$C_{iss}$	Input Capacitance	$V_{DS}=25V$ , $V_{GS}=0V$ , $f=1\text{MHz}$	---	1050	---	pF
$C_{oss}$	Output Capacitance		---	1200	---	
$C_{rss}$	Reverse Transfer Capacitance		---	40	---	

### Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current	$V_G=V_D=0V$ , Force Current	---	---	14	A
$I_{SM}$	Pulsed Source Current		---	---	56	A
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V$ , $I_S=12A$	---	---	1.2	V

#### Notes:

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. The EAS data shows Max. rating .The test condition is  $V_{DS}=50V$  ,  $V_{GS}=10V$  ,  $L=20\text{mH}$  ,  $I_{AS}=5.5A$ .
3. The value of  $R_{\theta JA}$  is measured with the device in a still air environment with  $T_A=25^{\circ}\text{C}$ .
4. The  $R_{\theta JA}$  is the sum of the thermal impedance from junction to case  $R_{\theta JC}$  and case to ambient.

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