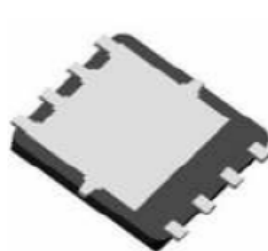


Description

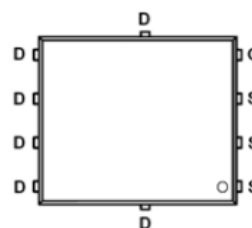
It utilizes the latest processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications.

Features and Benefits:

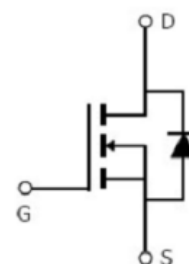
- Advanced MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 175°C operating temperature



PQFN 5X6



Marking and Pin Assignment



Schematic Diagram

Main Product Characteristics

V_{DS}	60V
$R_{DS(on)}$	11mΩ (typ.)
I_D	40A

Absolute Maximum Ratings

Symbol	Parameter	Max.	Units
I_D @ TC = 25°C	Continuous Drain Current, V_{GS} @ 10V①	40	A
I_D @ TC = 100°C	Continuous Drain Current, V_{GS} @ 10V	60	
I_{DM}	Pulsed Drain Current②	80	
P_D @ TC = 25°C	Power Dissipation③	115	W
	Linear Derating Factor	0.74	W/°C
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-to-Source Voltage	± 20	V
EAS	Single Pulse Avalanche Energy @ L=0.3mH	235	mJ
I_{AS}	Avalanche Current @ L=0.3mH	39	A
T_J TSTG	Operating Junction and Storage Temperature Range	-55 to + 175	°C

Thermal Resistance

Symbol	Characteristics	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case③	—	1.31	°C/W
$R_{\theta JA}$	Junction-to-ambient ④	—	62	°C/W

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

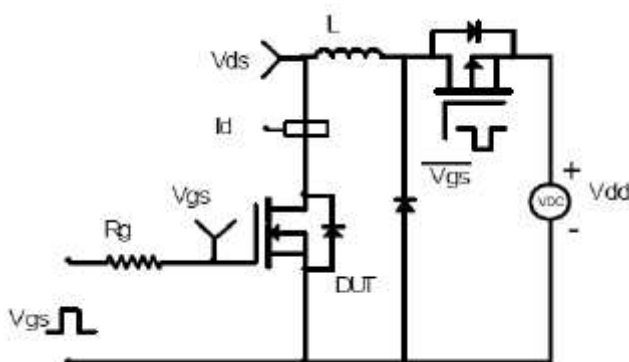
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	60	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	11	16	mΩ	$V_{GS}=10V, I_D = 30A$
		—	6.5	9		$V_{GS}=10V, I_D = 14A$
$V_{GS(th)}$	Gate threshold voltage	1	—	3	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	$V_{DS} = 60V, V_{GS} = 0V$ $T_J = 150^{\circ}\text{C}$
		—	—	10		
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS} = 20V$
		—	—	-100		$V_{GS} = -20V$
Q_g	Total gate charge	—	45	—	nC	$I_D = 15A,$ $V_{DS}=30V,$ $V_{GS} = 10V$
Q_{gs}	Gate-to-Source charge	—	4	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	15	—		
$t_{d(on)}$	Turn-on delay time	—	15	—	ns	$V_{GS}=10V, V_{DS}=30V,$ $R_L=15\Omega,$ $R_{GEN}=2.5\Omega$
t_r	Rise time	—	14	—		
$t_{d(off)}$	Turn-Off delay time	—	40	—		
t_f	Fall time	—	7.3	—		
C_{iss}	Input capacitance	—	1480	—	pF	$V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1\text{MHz}$
C_{oss}	Output capacitance	—	190	—		
C_{rss}	Reverse transfer capacitance	—	135	—		

Source-Drain Ratings and Characteristics

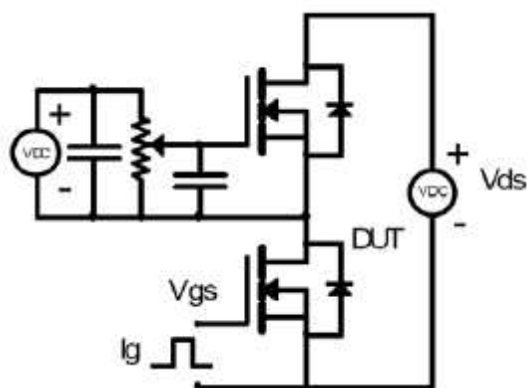
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	40	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	80	A	
V_{SD}	Diode Forward Voltage	—	—	1.3	V	$I_S=30A, V_{GS}=0V$
t_{rr}	Reverse Recovery Time	—	33	—	ns	$T_J = 25^{\circ}\text{C}, I_F = 15A,$ $di/dt = 100A/\mu s$
Q_{rr}	Reverse Recovery Charge	—	61	—	nC	

Test circuits and Waveforms

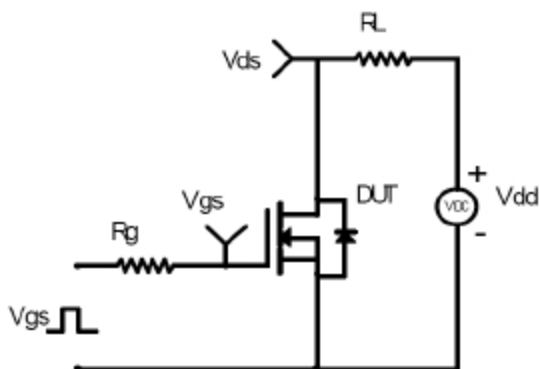
EAS Test Circuit



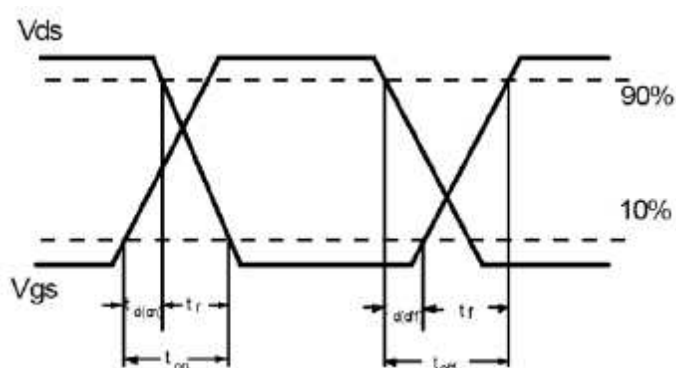
Gate charge test circuit



Switching Time Test Circuit



Switching Waveforms

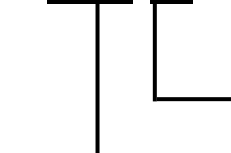


Notes:

- ① Continuous current tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.
- ④ The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$

Ordering and Marking Information

EC736014J7XX X



R : Tape & Reel

PQFN 5x6=F2

Part Number	Package	Marking	Marking Information
EC736014J7F2R	PQFN5x6		

TQFN 5x6 Package Outline Dimension

