

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-40V	31mΩ@-10V	-6.5A
	39mΩ@-4.5V	

Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

Application

- Power Switching Application

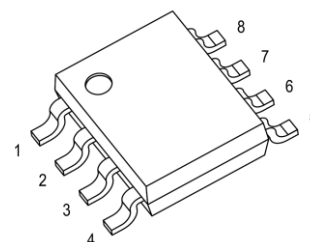
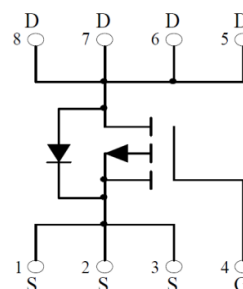
MARKING:


Q4007 = Device Code

XX = Date Code

Solid dot = Pin1 indicator

Solid dot = Green molding compound device

SOP8

Schematic diagram

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-40	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ¹	$T_A = 25^\circ\text{C}$	I_D	-6.5	A
	$T_A = 100^\circ\text{C}$	I_D	-4.1	A
Pulsed Drain Current ²		I_{DM}	-26	A
Single Pulsed Avalanche Current ³		I_{AS}	-14	A
Single Pulsed Avalanche Energy ³		E_{AS}	49	mJ
Power Dissipation ⁵	$T_A = 25^\circ\text{C}$	P_D	1.4	W
Thermal Resistance from Junction to Ambient ⁶		$R_{\theta JA}$	89	$^\circ\text{C/W}$
Junction Temperature		T_J	150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55~ +150	$^\circ\text{C}$

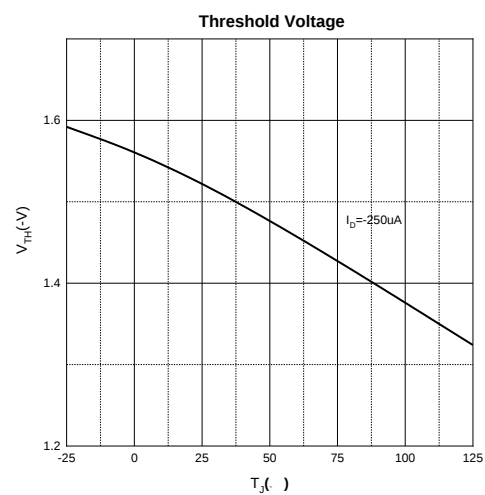
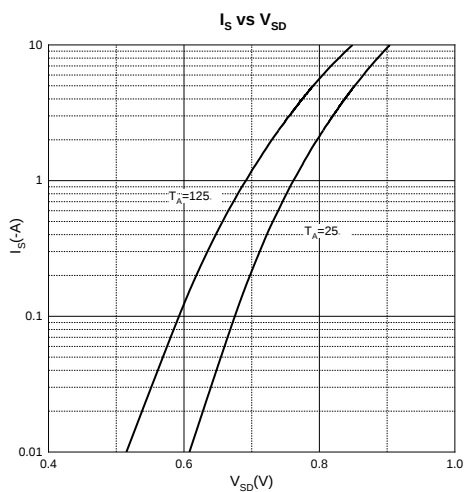
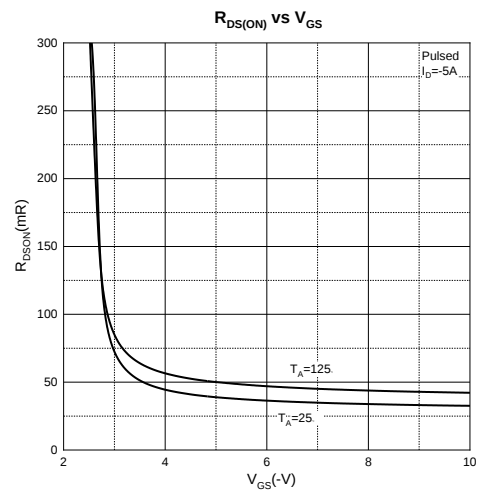
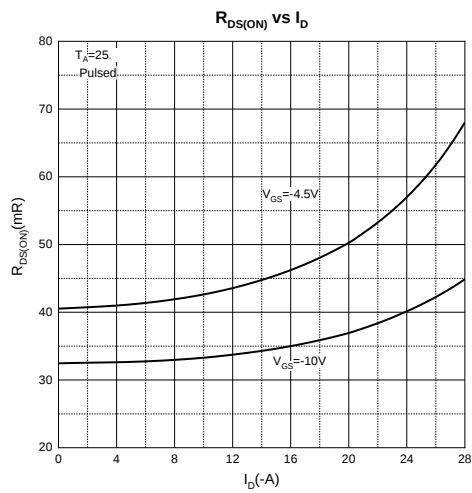
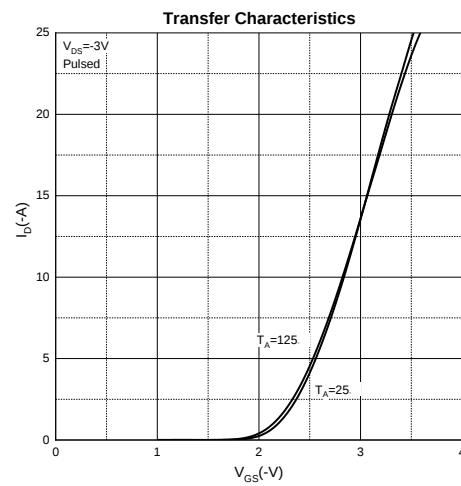
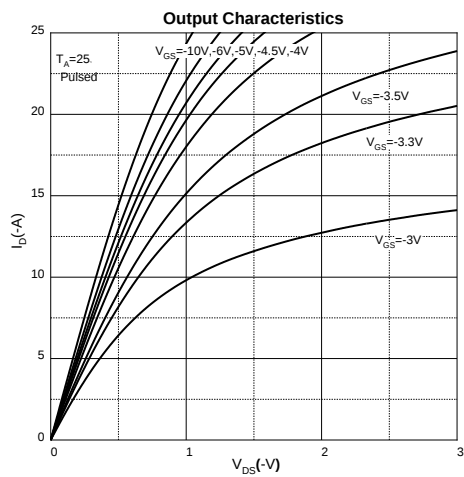
MOSFET ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

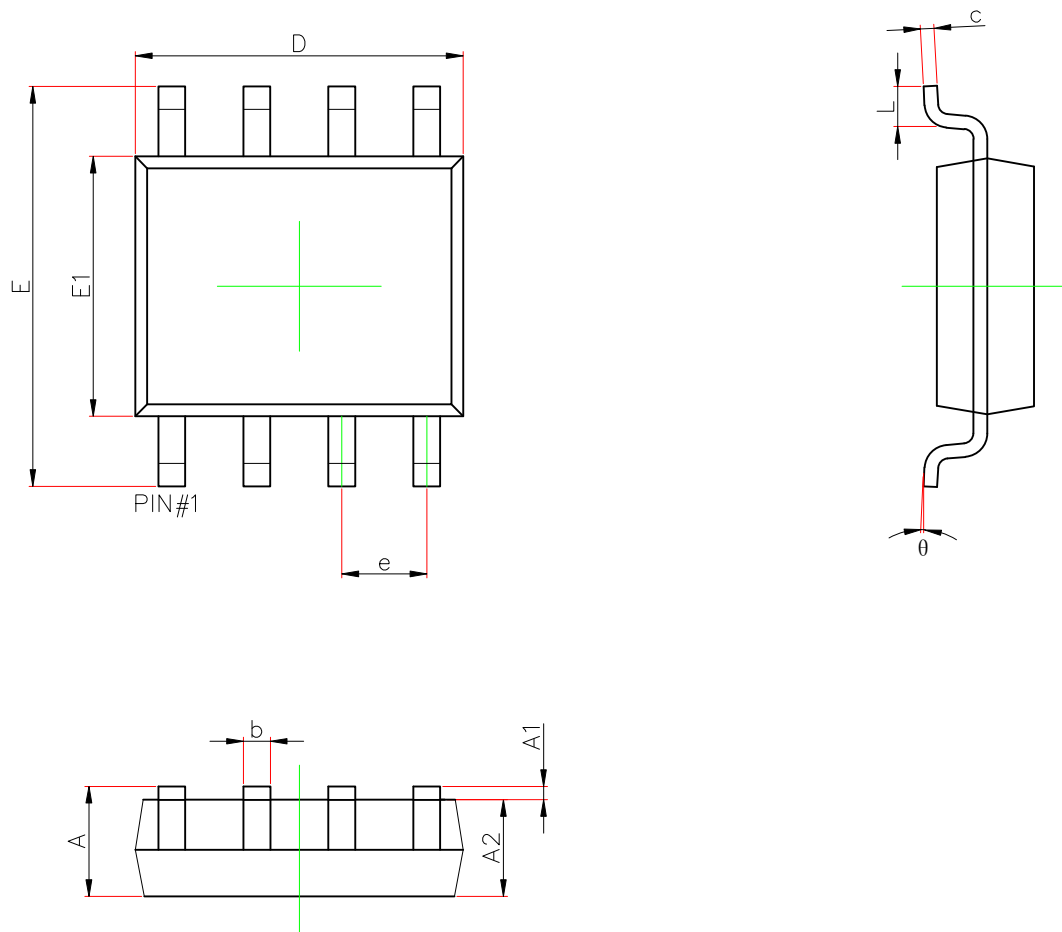
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -40V, V _{GS} = 0V			-1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics ⁴						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.0	-1.5	-3.0	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -5A		31	35	mΩ
		V _{GS} = -4.5V, I _D = -5A		39	51	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = -20V, V _{GS} = 0V, f = 1MHz		891		pF
Output Capacitance	C _{oss}			72		
Reverse Transfer Capacitance	C _{rss}			66		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		11		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = -20V, V _{GS} = -10V, I _D = -5A		20.5		nC
Gate-Source Charge	Q _{gs}			2.1		
Gate-Drain Charge	Q _{gd}			4.5		
Turn-On Delay Time	t _{d(on)}	V _{DD} = -20V, V _{GS} = -10V, R _L = 1.25Ω, R _G = 3Ω		11.3		ns
Turn-On Rise Time	t _r			4.5		
Turn-Off Delay Time	t _{d(off)}			35		
Turn-Off Fall Time	t _f			46.4		
Source - Drain Diode Characteristics						
Diode Forward Voltage ³	V _{SD}	V _{GS} = 0V, I _S = -1A			-1.2	V

Notes :

- 1.The maximum current rating is limited by package.And device mounted on a large heatsink
- 2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.
- 3.EAS condition: V_{DD} = -20V, V_{GS} = -10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°C.
- 4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
- 5.The power dissipation P_D is limited by T_{J(MAX)} = 150°C.And device mounted on a large heatsink
- 6.Device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C.

Typical Characteristics



SOP8 Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.156	0.250	0.006	0.010
D	4.700	5.100	0.185	0.201
e	1.270(BSC)		0.050(BSC)	
E	5.800	6.200	0.228	0.244
E1	3.700	4.100	0.146	0.161
L	0.400	1.270	0.016	0.05
θ	0°	8°	0°	8°

Attention:

- GreenPower Electronics reserves the right to improve product design function and reliability without notice.
- Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.
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