

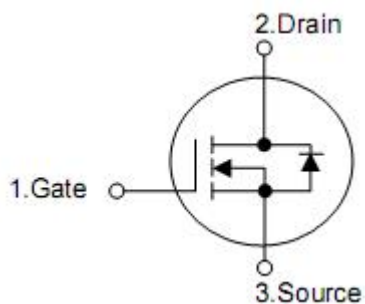
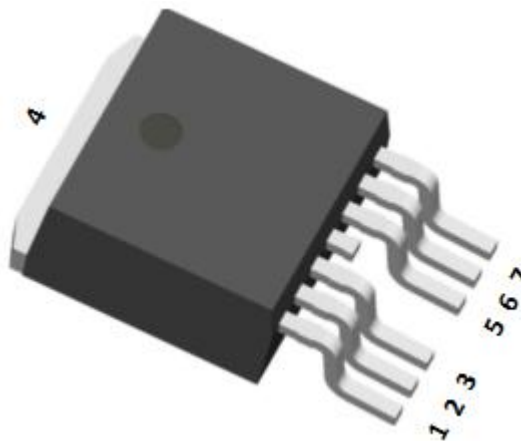
## 1. Features

- $R_{DS(on)}$  (TYP.)= 2.2m $\Omega$  @ $V_{GS}$ = 10 V
- Lead free and green device available
- Low Rds-on to minimize conductive loss
- High avalanche current

## 2. Applications

- Power supply
- DC-DC converters

## 3. Pin configuration



Pin	Function
1	Gate
2	Source
3	Source
4	Drain
5	Source
6	Source
7	Source

#### 4. Absolute maximum ratings

Parameter		Symbol	Maximum	Units
Drain-to-source voltage		$V_{DSS}$	40	V
Gate-to-source voltage		$V_{GSS}$	$\pm 25$	V
Continuous drain current	$T_C=25^\circ\text{C}$ (Silicon limited)	$I_D$	190	A
	$T_C=25^\circ\text{C}$ (Package limited)		120	
	$T_C=100^\circ\text{C}$ (Silicon limited)		109	
Pulsed drain current	$T_C=25^\circ\text{C}$	$I_{DP}$	480	A
Avalanche current(L=0.5mH)		$I_{AS}$	46	A
Avalanche energy(L=0.5mH)		$E_{AS}$	529	mJ
Maximum power dissipation	$T_C=25^\circ\text{C}$	$P_D$	123	W
	$T_C=100^\circ\text{C}$		82	W
Junction & storage temperature range		$T_J, T_{STG}$	-55~150	$^\circ\text{C}$

\*Drain current limited by maximum junction temperature.

#### 5. Thermal characteristics

Parameter	Symbol	Typical	Units
Thermal resistance-junction to case	$R_{\theta jc}$	1.02	$^\circ\text{C}/\text{W}$
Thermal resistance-junction to ambient	$R_{\theta ja}$	80	

## 6. Electrical characteristics

(T<sub>A</sub>=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static characteristics						
Drain-source breakdown voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>DS</sub> =250μA	40	-	-	V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =64V, V <sub>GS</sub> =0V	-	-	1	μA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =250μA	2	-	4	V
Gate leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±25V, V <sub>DS</sub> =0V	-	-	±100	nA
Drain-source on-state resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>DS</sub> =30A	-	2.2	3.5	mΩ
Forward Transconductance	G <sub>fs</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =40A	-	135	-	S
Diode characteristics						
Diode forward voltage	V <sub>SD</sub>	I <sub>SD</sub> =40A, V <sub>GS</sub> =0V	-	0.9	1.3	V
Diode continuous forward current	I <sub>S</sub>		-	-	190	A
Reverse recovery time	t <sub>rr</sub>	I <sub>S</sub> =40A, di/dt=100A/μs	-	55	-	nS
Reverse recovery charge	Q <sub>rr</sub>		-	70	-	nC
Dynamic characteristics <sup>2</sup>						
Gate resistance	R <sub>G</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, F=1MHz	-	2.0	-	Ω
Input capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, F=1.0MHz	-	6010	-	pF
Output capacitance	C <sub>oss</sub>		-	1400	-	
Reverse transfer capacitance	C <sub>rss</sub>		-	675	-	
Turn-on delay time	t <sub>d(ON)</sub>	V <sub>DD</sub> =25V, I <sub>D</sub> =90A, V <sub>GS</sub> =10V, R <sub>G</sub> =2.7Ω	-	25	-	nS
Turn-on rise time	t <sub>r</sub>		-	102	-	
Turn-off delay time	t <sub>d(OFF)</sub>		-	62	-	
Turn-off fall time	t <sub>f</sub>		-	84	-	
Gate charge characteristics <sup>2</sup>						
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> =40V, V <sub>GS</sub> =10V, I <sub>D</sub> =32A, F=1.0MHz	-	150	-	nC
Gate-to-source charge	Q <sub>gs</sub>		-	32	-	
Gate-to-drain charge	Q <sub>gd</sub>		-	70	-	

8. Test circuits and waveforms

Fig 1: Output Characteristics

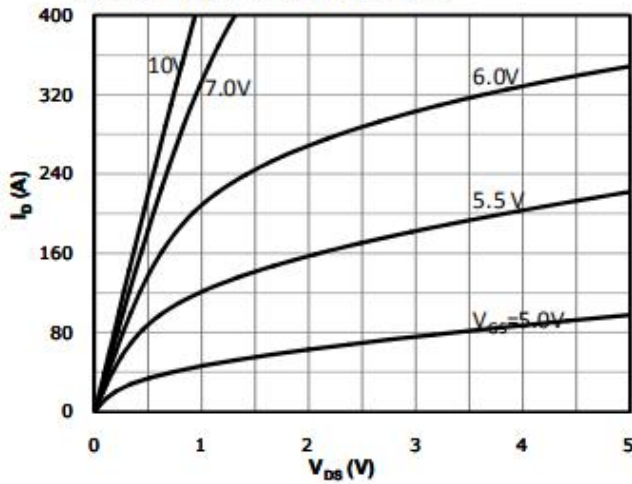


Fig 2: Transfer Characteristics

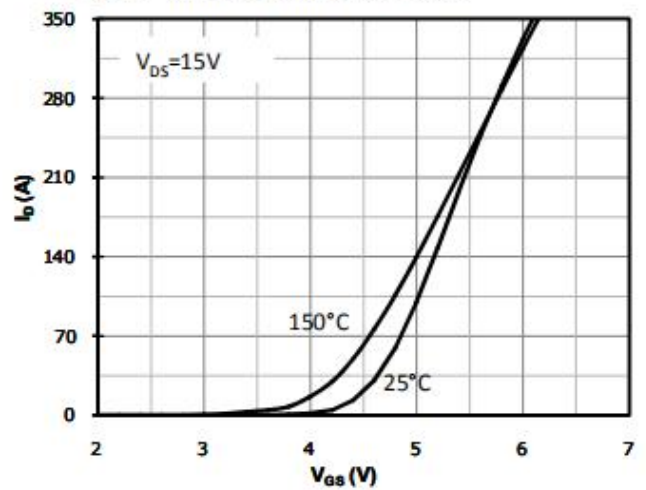


Fig 3: Rds(on) vs Drain Current and Gate Voltage

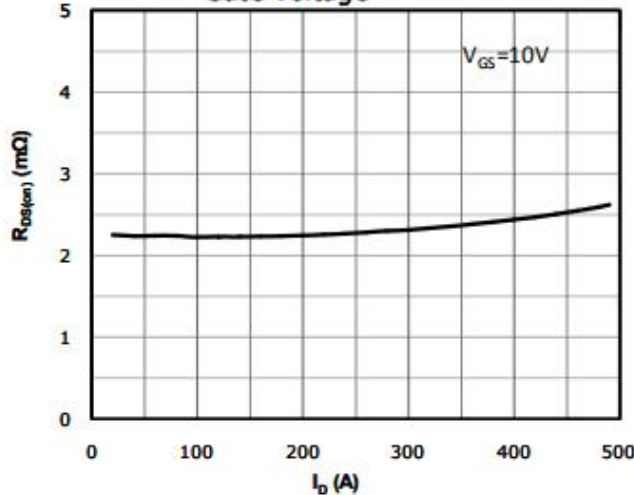


Fig 4: Rds(on) vs Gate Voltage

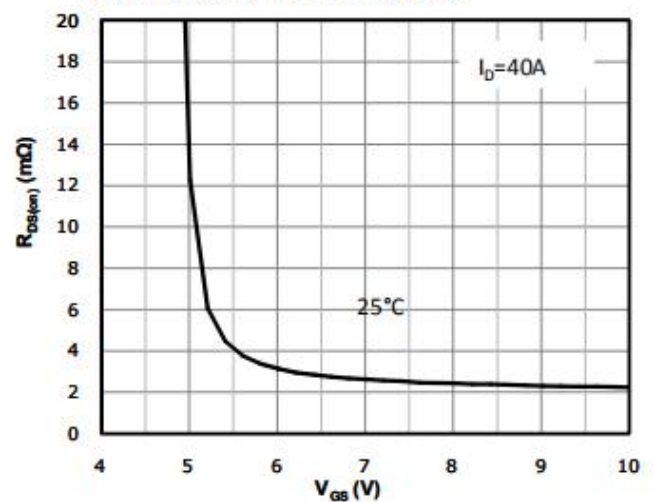


Fig 5: Rds(on) vs. Temperature

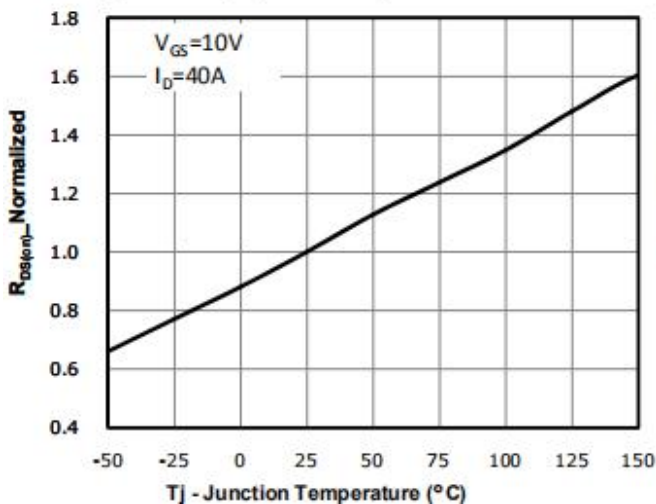
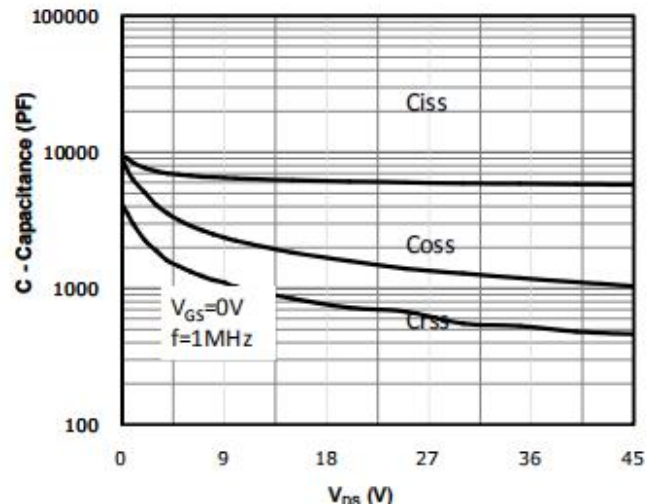
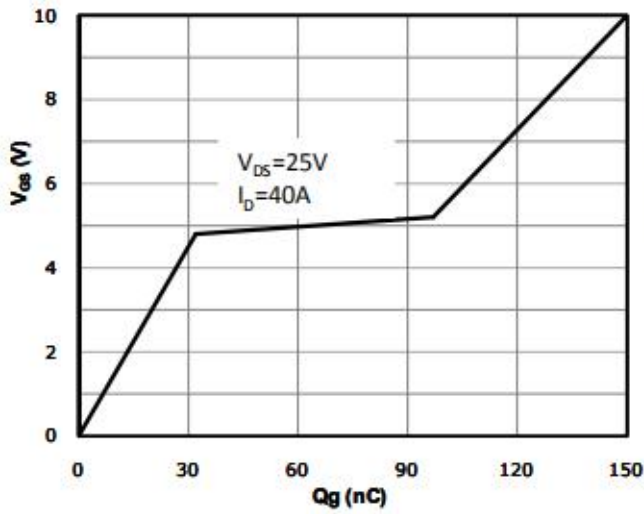


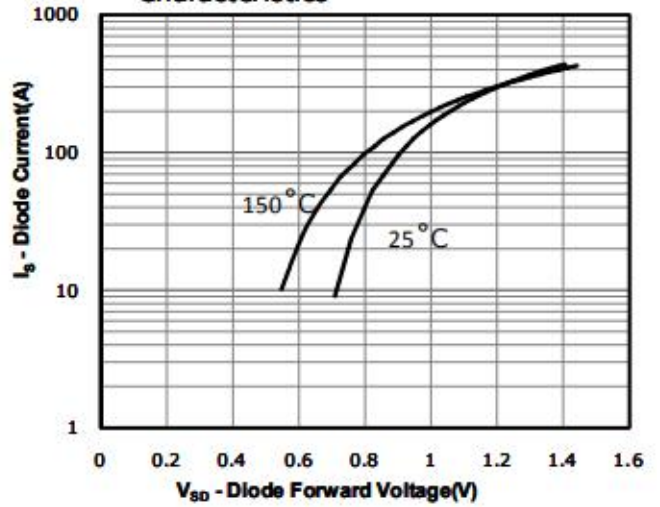
Fig 6: Capacitance Characteristics



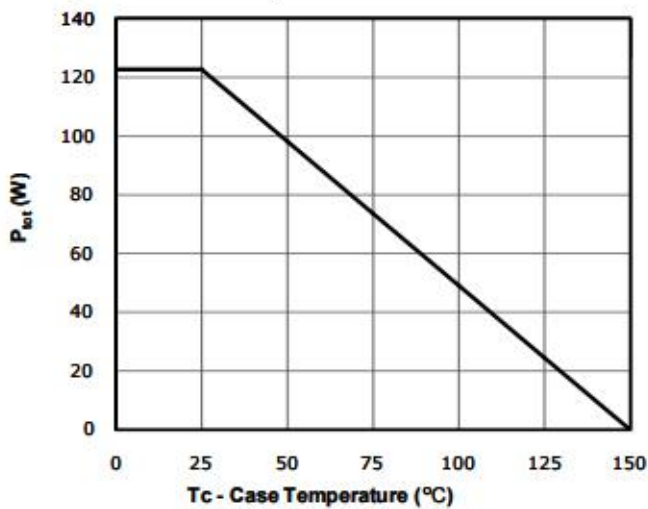
**Fig 7: Gate Charge Characteristics**



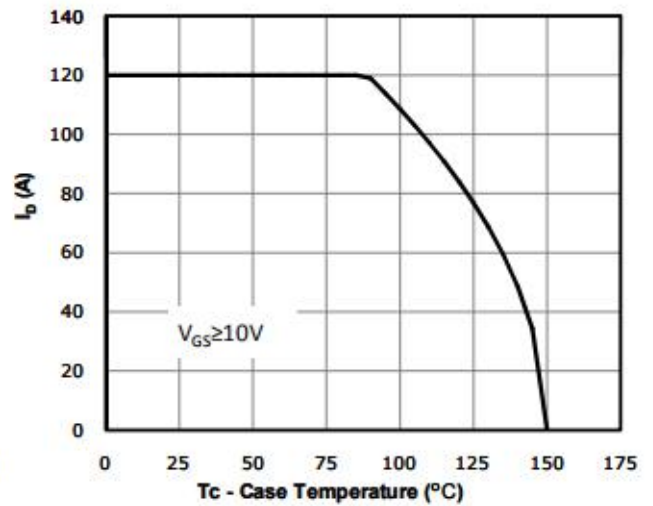
**Fig 8: Body-diode Forward Characteristics**



**Fig 9: Power Dissipation**



**Fig 10: Drain Current Derating**



**Fig 11: Safe Operating Area**

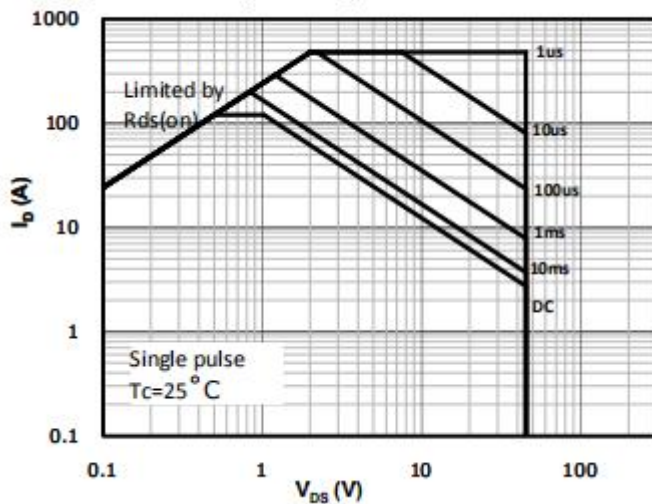


Fig 12: Max. Transient Thermal Impedance

