

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
40V	1.6m $\Omega$ @10V	180A
	2.6m $\Omega$ @4.5V	

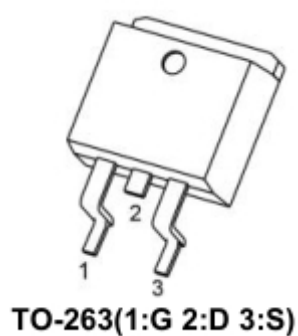
## Feature

- Low Gate Charge and Rdson
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

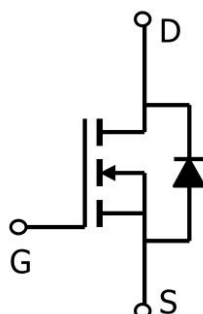
## Application

- Power switching application
- DC/DC Converter

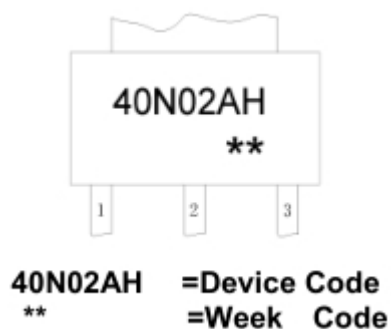
## Package



## Circuit diagram



## Marking



## Absolute maximum ratings

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	40	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current(Tc=25°C)	I <sub>D</sub>	180	A
Pulsed Drain Current <sup>2</sup>	I <sub>DM</sub>	720	A
Single Pulse Avalanche Energy <sup>3</sup>	E <sub>AS</sub>	529	mJ
Total Power Dissipation <sup>2</sup> (Tc=25°C)	P <sub>D</sub>	246	W
Thermal Resistance Junction-Case <sup>1</sup>	R <sub>θJC</sub>	0.51	°C/W
Storage Temperature Range	T <sub>STG</sub>	-55 to 150	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55 to 150	°C

## Electrical characteristics

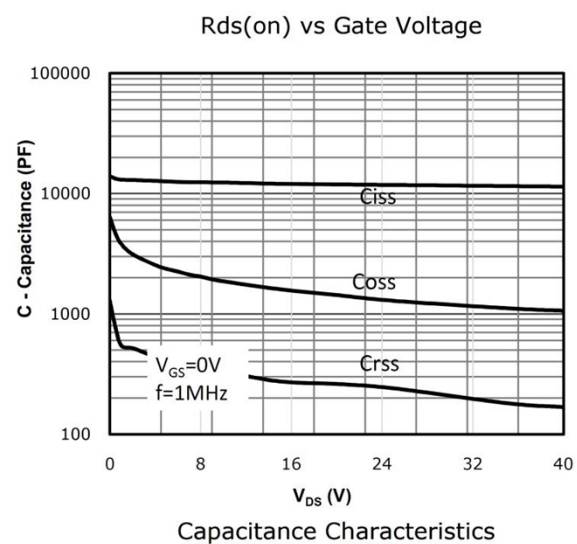
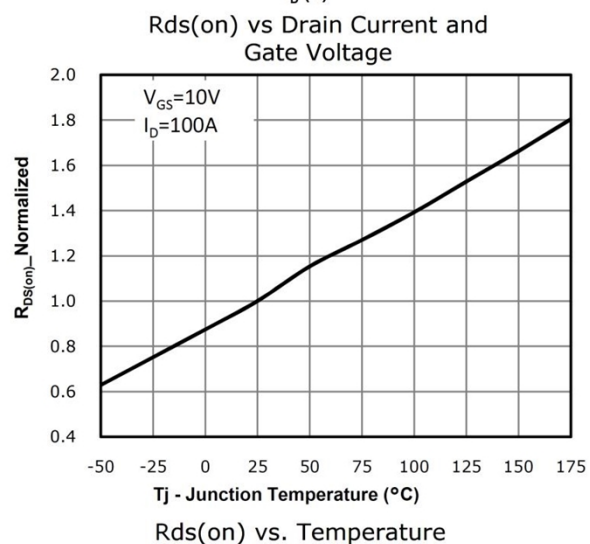
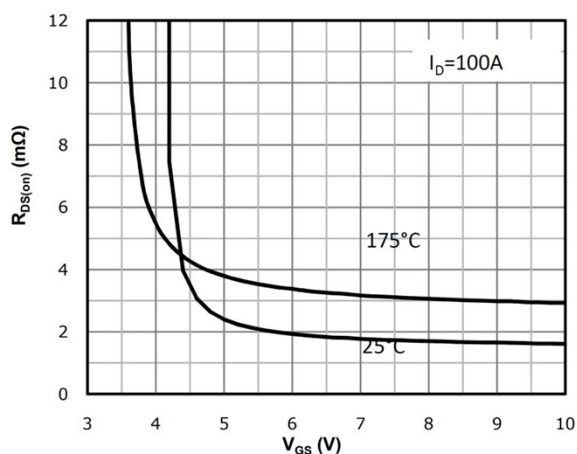
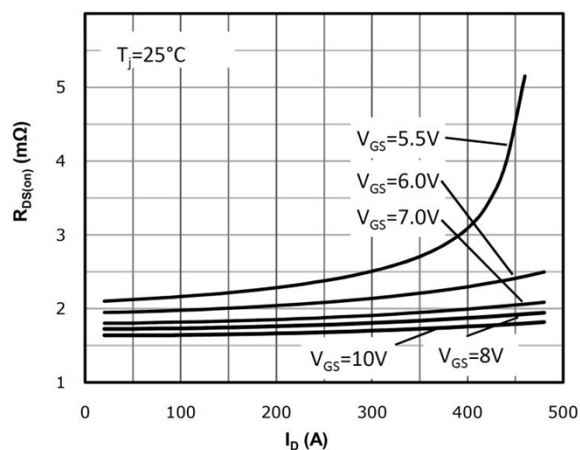
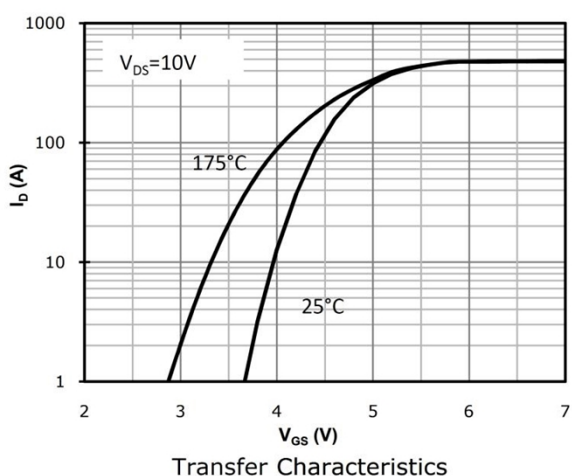
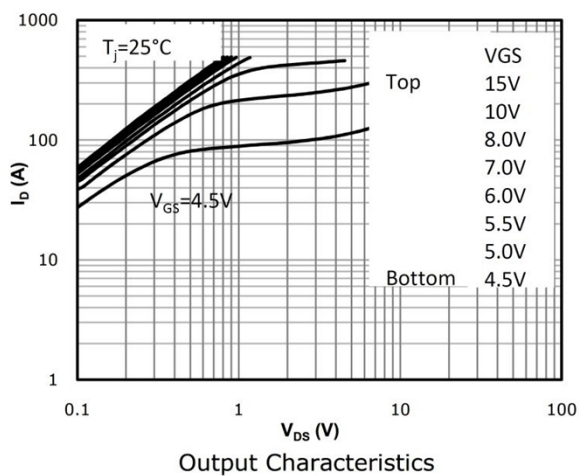
( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

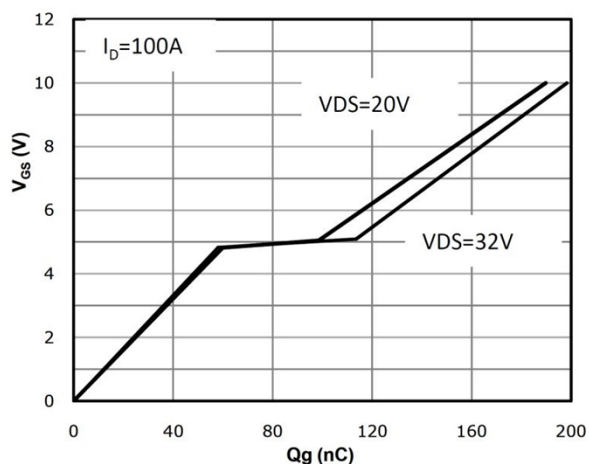
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV (BR)DSS	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	40			V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =32V,V <sub>GS</sub> = 0V			1	uA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V , V <sub>DS</sub> =0V			±100	uA
Gate-source threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1	1.6	2.5	V
Static Drain-Source On-Resistance <sup>2</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =100A		1.6	2	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =30A		2.6	3.5	
Dynamic Characteristics						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V, f=1MHz		11485		pF
Output Capacitance	C <sub>Oss</sub>			1228		
Reverse Transfer Capacitance	C <sub>rss</sub>			259		
Switching Characteristics						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =20V, V <sub>DS</sub> =10V, I <sub>D</sub> =100A		157		pF
Gate-Source Charge	Q <sub>gs</sub>			59		
Gate-Drain Charge	Q <sub>gd</sub>			31		
Turn-On Delay Time	T <sub>d(on)</sub>	V <sub>DD</sub> =32V, V <sub>GS</sub> =10V, R <sub>G</sub> =2.6Ω, I <sub>D</sub> =30A		16		nS
Rise Time	T <sub>r</sub>			90		
Turn-Off Delay Time	T <sub>d(off)</sub>			192		
Fall Time	T <sub>f</sub>			83		
Diode Characteristics						
Diode Forward Voltage <sup>2</sup>	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =1A			1.2	V

### Note:

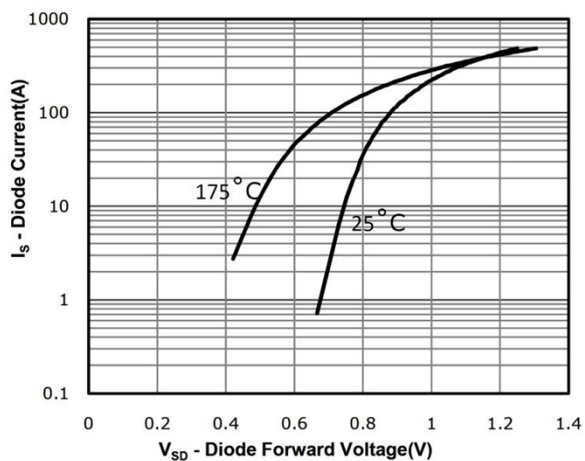
1. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$
3. The EAS data shows Max. rating . The test condition is  $V_{DD} = 20V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$
4. The power dissipation is limited by  $150^{\circ}\text{C}$  junction temperature

## Typical Characteristics

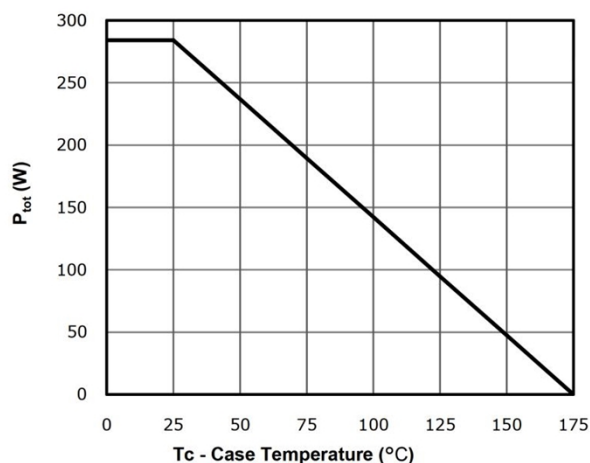




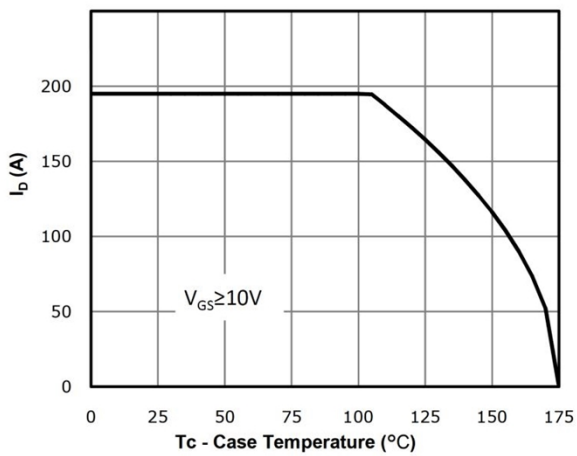
Gate Charge Characteristics



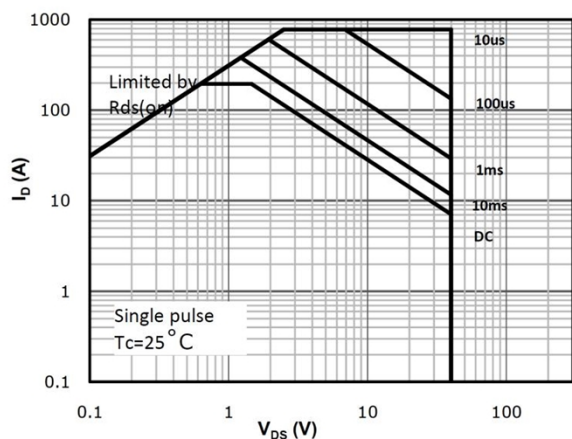
Body-diode Forward Characteristics



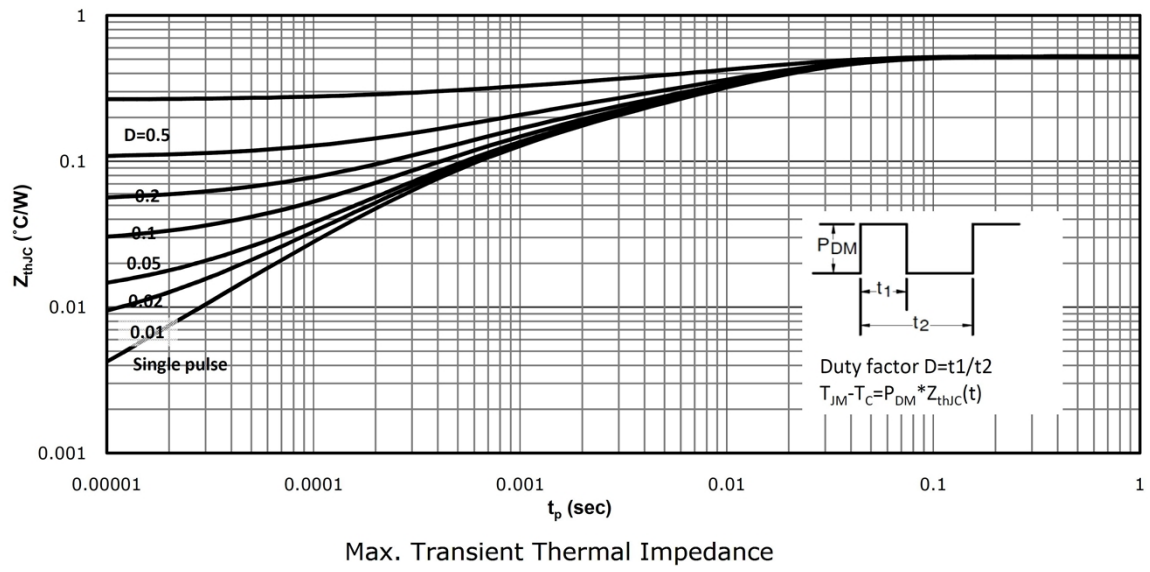
Power Dissipation



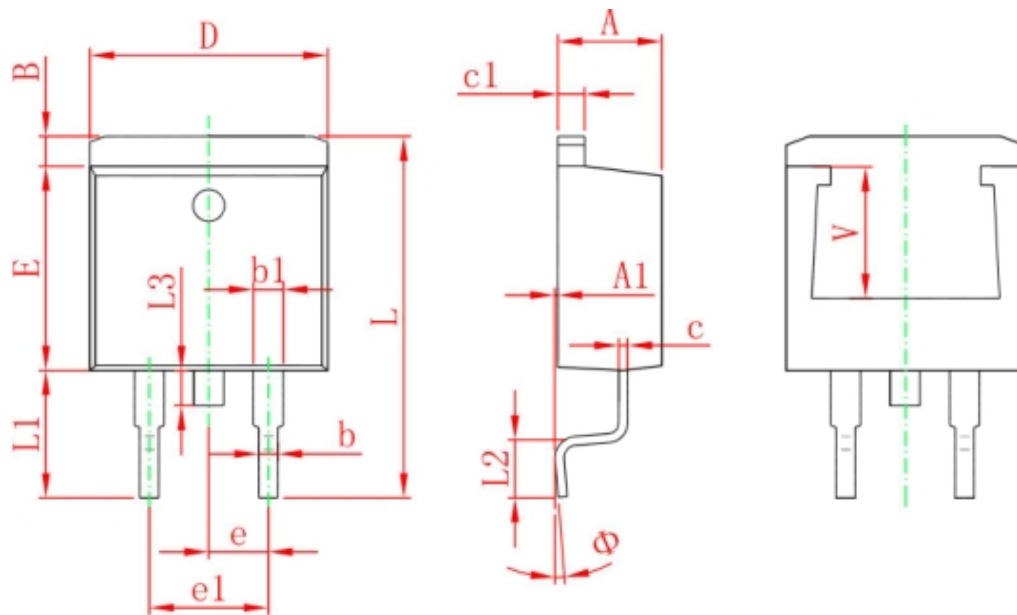
Drain Current Derating



Safe Operating Area



## TO-263 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.120	1.420	0.044	0.056
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
L	14.940	15.500	0.588	0.610
L1	4.950	5.450	0.195	0.215
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
Φ	0°	8°	0°	8°
V	5.600 REF.		0.220 REF.	