

Features

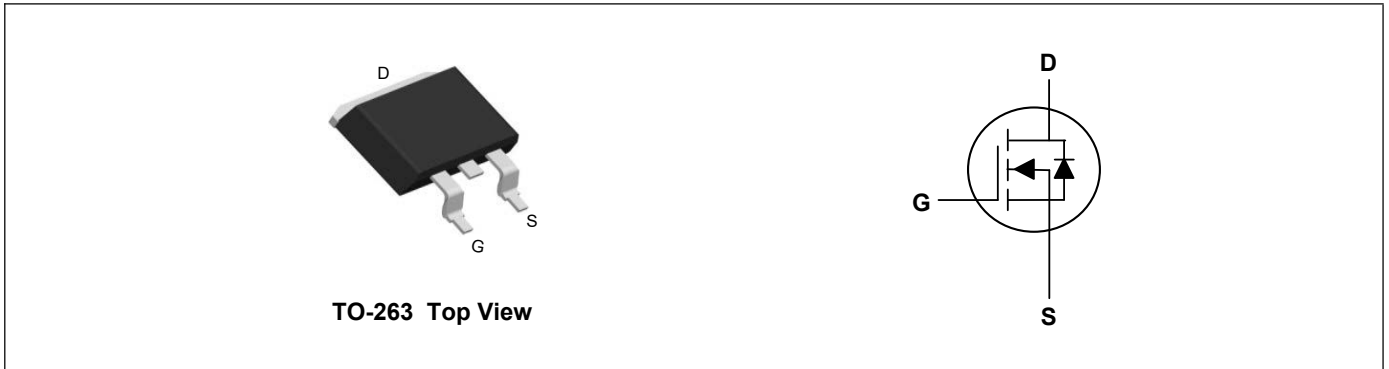
- Advanced Shield Gate Trench technology
- Super Low Gate Charge
- High-Speed Switching
- 100% EAS Guaranteed
- Green Device Available

Product Summary

V_{DS}	100	V
I_D	176	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	2.6	m Ω

Applications

- High Frequency Point-of-Load, Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch



Absolute Maximum Ratings($T_C=25^\circ C$, unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	I_D	176	A
Continuous Drain Current ¹	I_D	122	A
Pulsed Drain Current ²	I_{DM}	704	A
Single Pulse Avalanche Energy ³	E_{AS}	1150	mJ
Total Power Dissipation ⁴	P_D	300	W
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ C$
Operating Junction Temperature Range	T_J	-55 to 150	$^\circ C$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	---	40	$^\circ C/W$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	---	0.6	$^\circ C/W$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	$V_{GS}=10V, I_D=100A$	---	2.1	2.6	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2.2	3	3.8	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$	---	---	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	5.1	---	Ω
Total Gate Charge	Q_g	$V_{DD}=50V, V_{GS}=10V, I_D=100A$	---	170	---	nC
Gate-Source Charge	Q_{gs}		---	60	---	
Gate-Drain Charge	Q_{gd}		---	40	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=50V, V_{GS}=10V, R_G=5.1\Omega, I_D=100A$	---	42	---	ns
Rise Time	T_r		---	38	---	
Turn-Off Delay Time	$T_{d(off)}$		---	90	---	
Fall Time	T_f		---	30	---	
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V, f=1\text{MHz}$	---	12000	---	pF
Output Capacitance	C_{oss}		---	1800	---	
Reverse Transfer Capacitance	C_{rss}		---	90	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ¹	I_S		---	---	176	A
Diode Forward Voltage ²	V_{SD}	$V_{GS}=0V, I_S=100A, T_J=25^\circ\text{C}$	---	0.8	1.1	V
Reverse Recovery Time	t_{rr}	$I_F=100A, V_R=50V, di/dt=100A/\mu s, T_J=25^\circ\text{C}$	---	100	---	nS
Reverse Recovery Charge	Q_{rr}		---	300	---	nC

Note:

1. The data tested by surface mounted on a 1 inch² 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 $V_{DD}=20V, R_G=25\Omega, I_{AS}=50A$
4. The power dissipation is limited by 150 $^\circ\text{C}$ junction temperature

Typical Characteristics

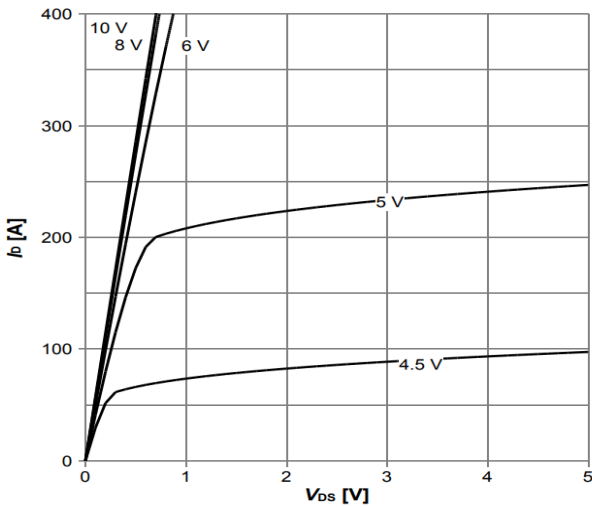


Figure 1: Typ. Output Characteristics

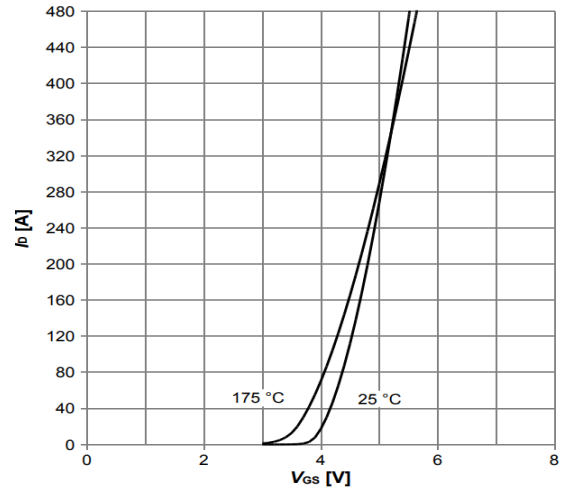


Figure 2: Typ. Transfer Characteristics

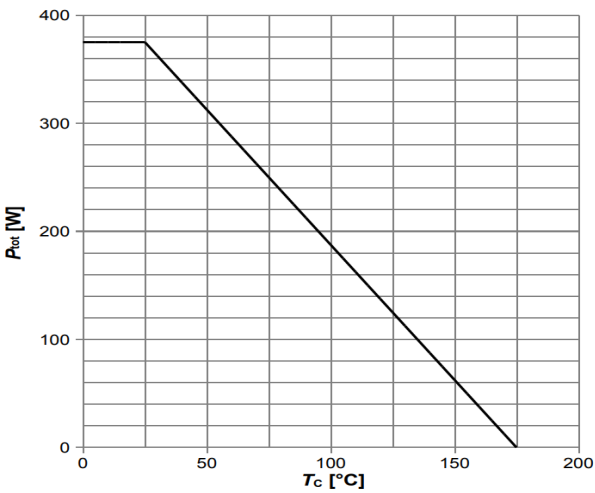


Figure 3: Power Dissipation

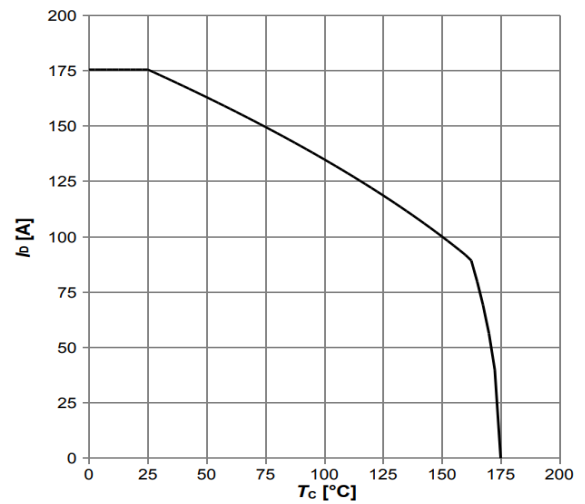


Figure 4: Drain Current vs. Temperature

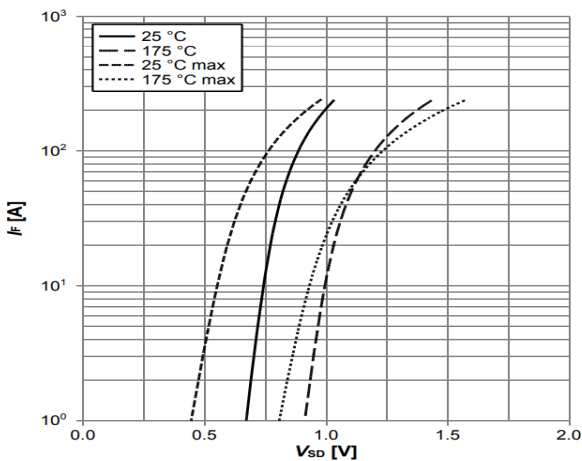


Figure 5: Forward Characteristics of Reverse Diode

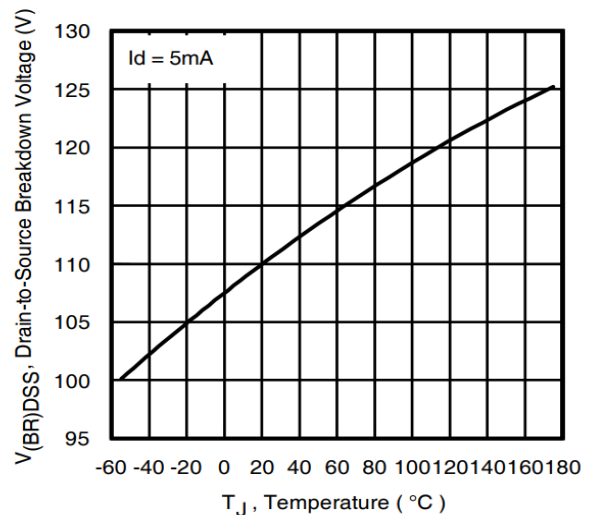


Figure 6: Drain-Source Breakdown Voltage

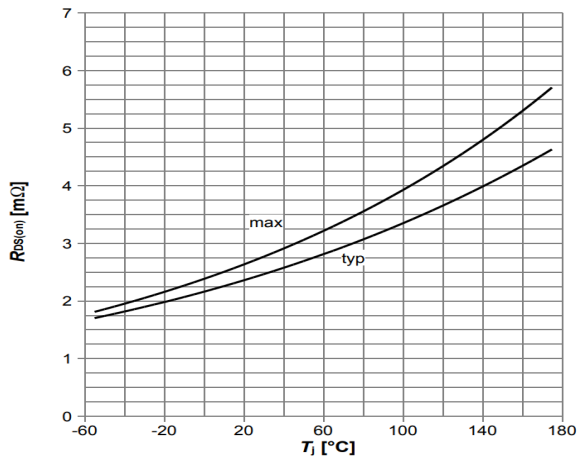


Figure 7: Typ. Drain-Source On-State Resistance

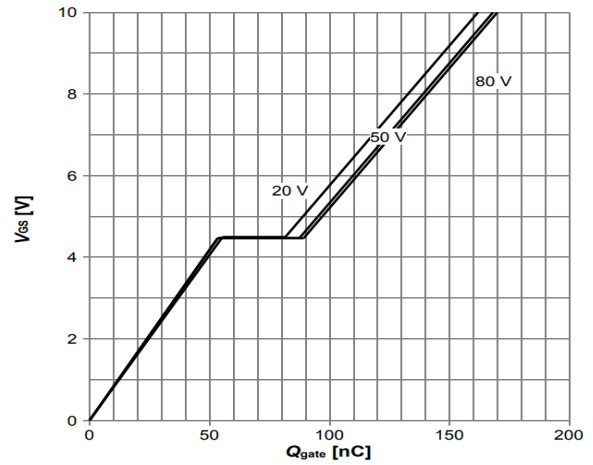


Figure 8: Typ. Gate Charge

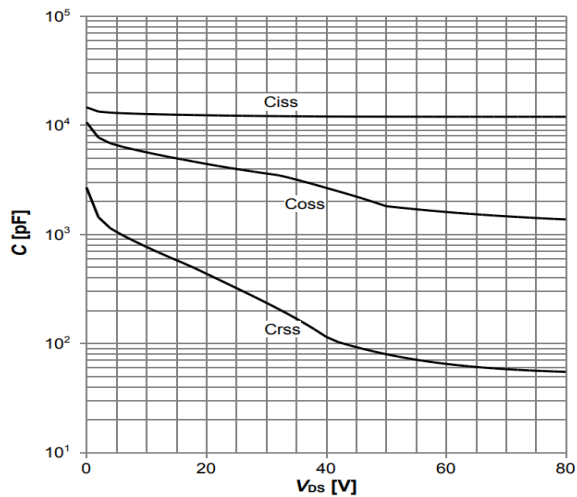


Figure 9: Typ. Capacitances

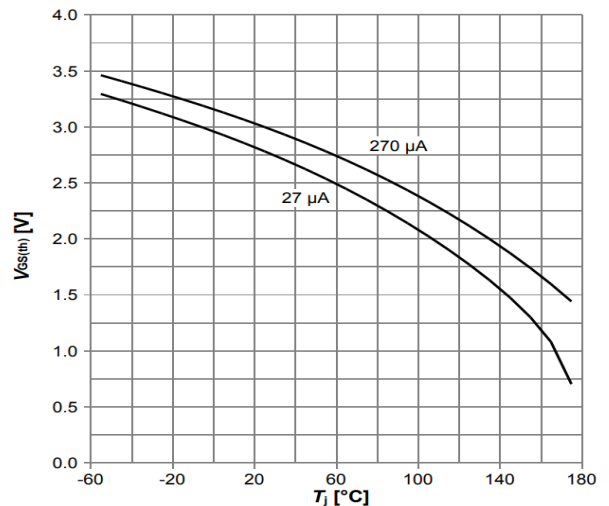


Figure 10: Typ. Gate threshold voltage

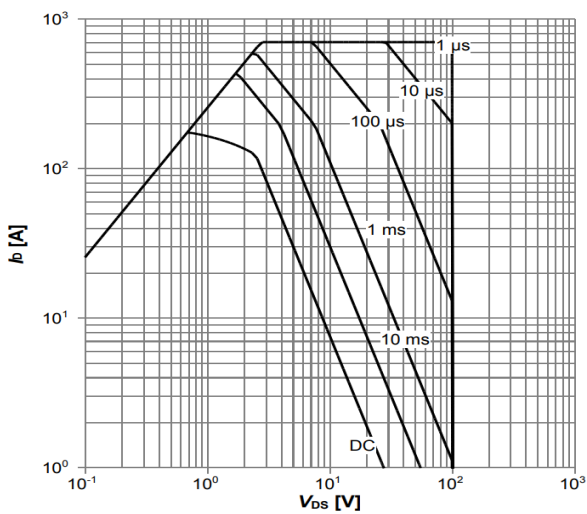


Figure 11: Max. Forward Safe Operating Area

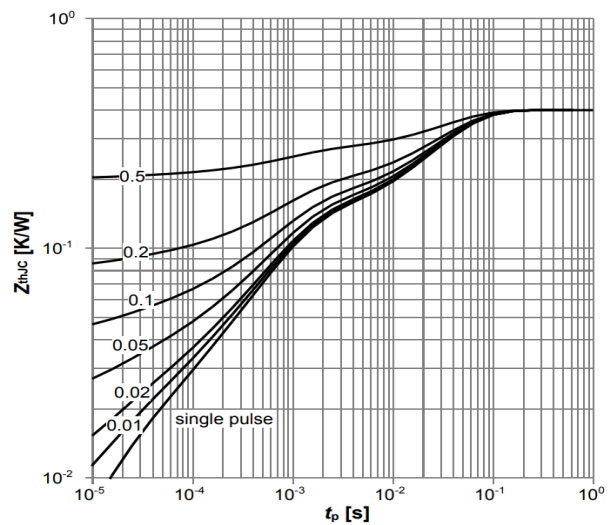
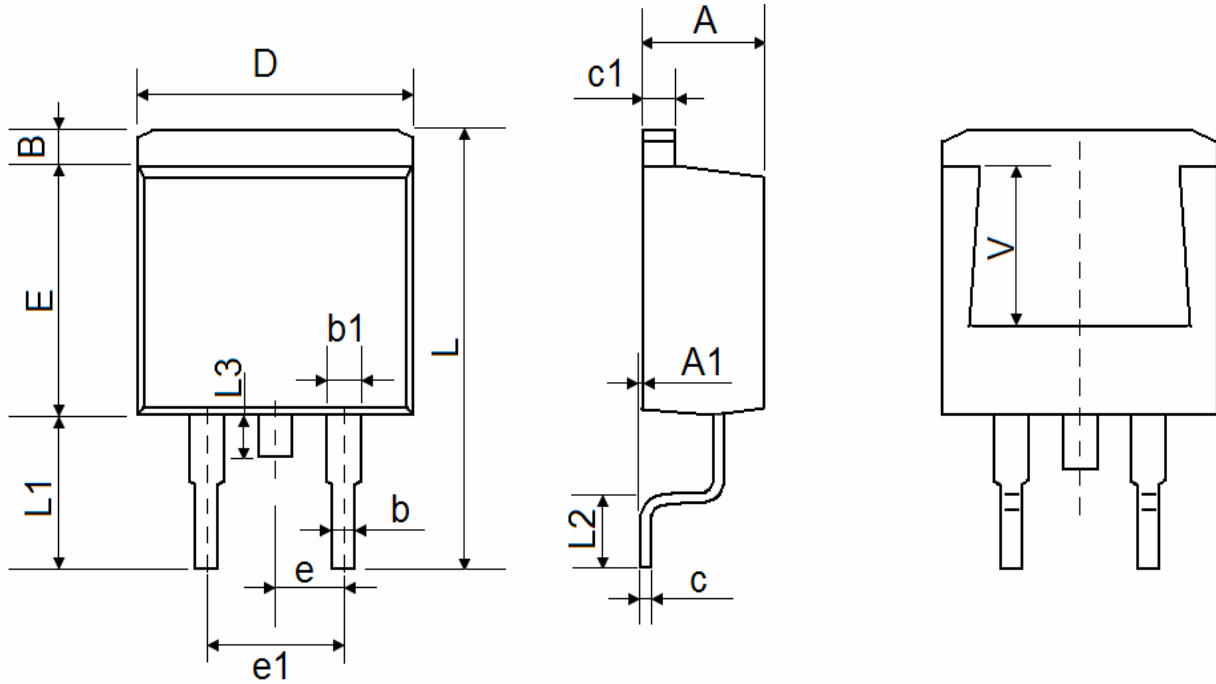


Figure 12: Max. Transient Thermal Impedance

TO-263 Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	4.40	4.55	4.70	A1	0.00	0.07	0.15
B	1.00	1.20	1.40	b	0.65	0.80	0.95
b1	1.10	1.15	1.37	c	0.30	0.40	0.53
c1	1.10	1.25	1.37	D	9.80	10.00	10.40
E	8.50	8.80	9.20	e	2.54 REF		
e1	4.90	5.10	5.40	L	14.80	15.20	15.70
L1	5.00	5.25	5.60	L2	2.05	2.45	2.80
L3	1.20	1.50	1.80	V	5.60 REF		