

**Features**

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

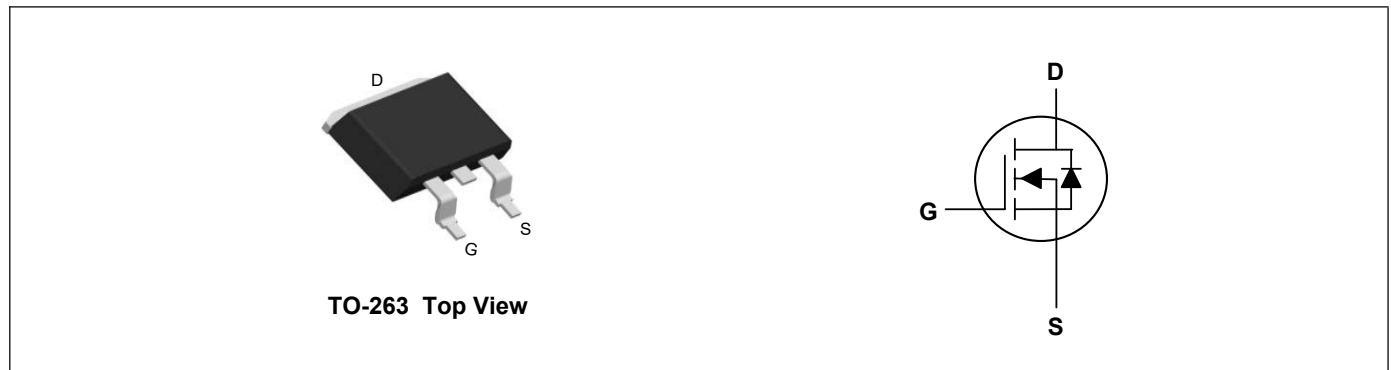
**Product Summary**



$V_{DS}$	100	V
$I_D$	150	A
$R_{DS(ON)}$ (at $V_{GS}=10V$ )	3.5	m $\Omega$

**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	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>1</sup>	$I_D$	150	A
Continuous Drain Current <sup>1</sup>	$I_D$	108	A
$T_C=100^\circ C$			
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	550	A
Single Pulse Avalanche Energy <sup>3</sup>	$E_{AS}$	756	mJ
Total Power Dissipation <sup>4</sup>	$P_D$	188	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 <sup>1</sup>	$R_{\theta JA}$	---	55	$^\circ C/W$
Thermal Resistance Junction-Case <sup>1</sup>	$R_{\theta JC}$	---	0.8	$^\circ C/W$

**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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	---	3.5	4.2	m $\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2.0	2.8	4.0	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$	---	---	1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
Forward Transconductance	$g_{fs}$	$V_{DS}=5V, I_D=20A$	55	---	---	S
Total Gate Charge	$Q_g$	$V_{DS}=40V, V_{GS}=10V, I_D=10A$	---	57	---	nC
Gate-Source Charge	$Q_{gs}$		---	11	---	
Gate-Drain Charge	$Q_{gd}$		---	16	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=50V, V_{GS}=10V, R_G=6\Omega, I_D=1A$	---	14	---	ns
Rise Time	$T_r$		---	34	---	
Turn-Off Delay Time	$T_{d(off)}$		---	60	---	
Fall Time	$T_f$		---	50	---	
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V, f=1MHz$	---	3430	---	pF
Output Capacitance	$C_{oss}$		---	900	---	
Reverse Transfer Capacitance	$C_{rss}$		---	13	---	

**Drain-Source Diode Characteristics**

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage <sup>2</sup>	$V_{SD}$	$V_{GS}=0V, I_S=1A, T_J=25^{\circ}\text{C}$	---	---	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  $V_{DD}=25V, V_{GS}=10V, L=0.5mH$
4. The power dissipation is limited by 150 $^{\circ}\text{C}$  junction temperature

**Typical Characteristics**

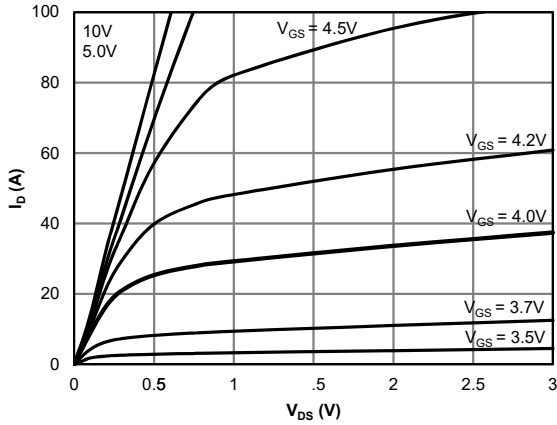


Figure 1: Saturation Characteristics

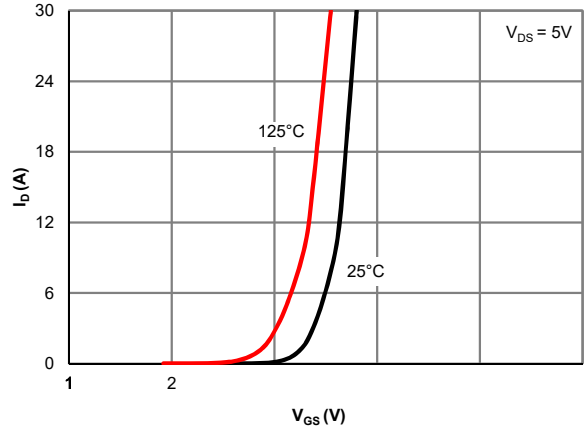


Figure 2: Transfer Characteristics

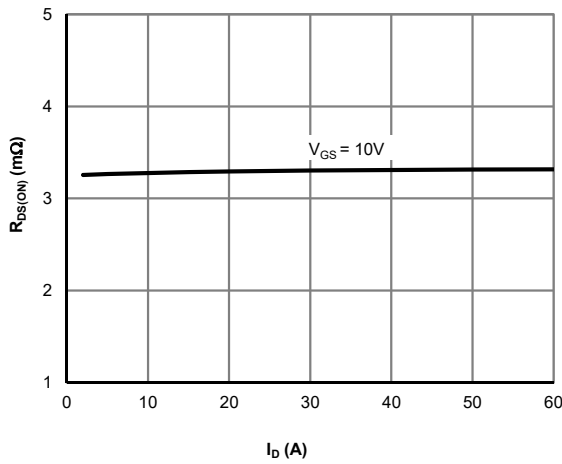


Figure 3:  $R_{DS(ON)}$  vs. Drain Current

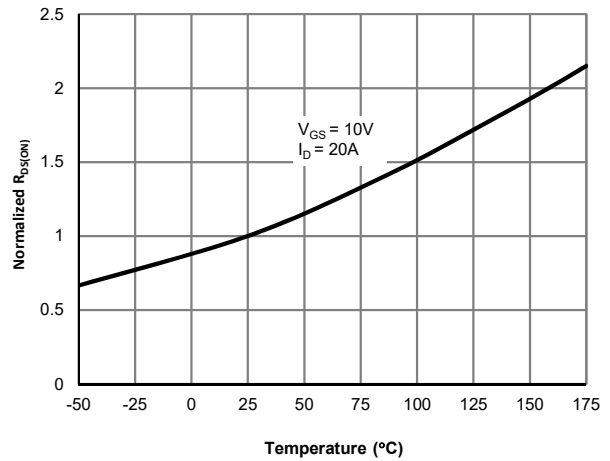


Figure 4:  $R_{DS(ON)}$  vs. Junction Temperature

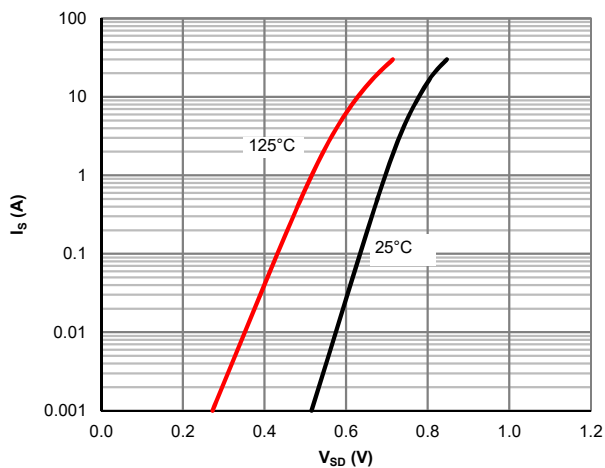


Figure 5: Body-Diode Characteristics

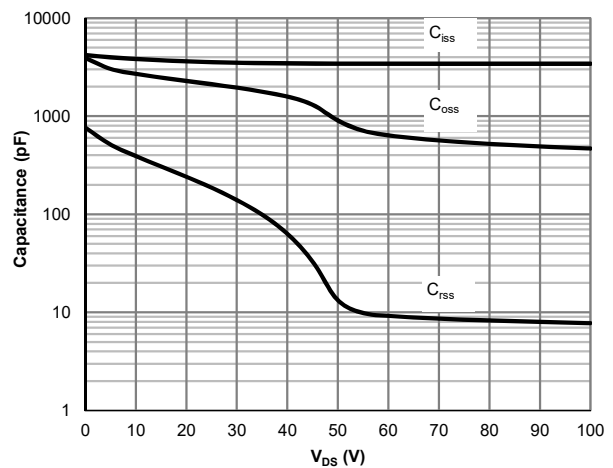


Figure 6: Capacitance Characteristics

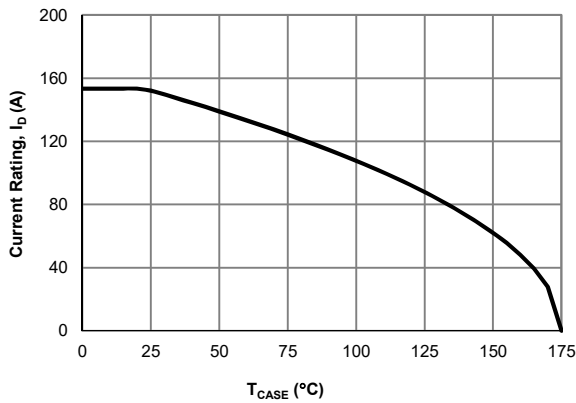


Figure 7: Current De-rating

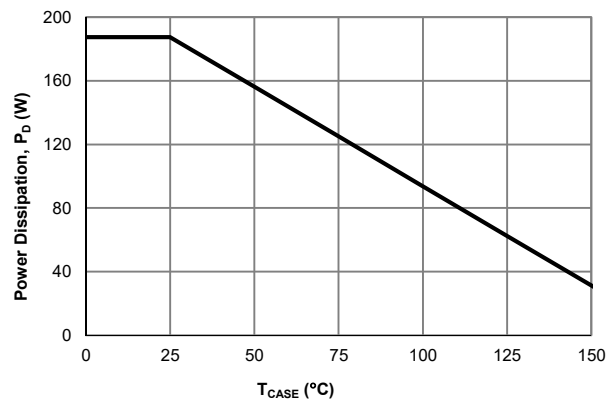


Figure 8: Power De-rating

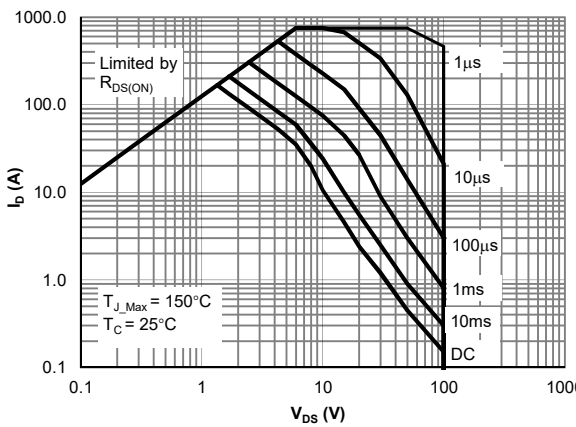


Figure 9: Maximum Safe Operating Area

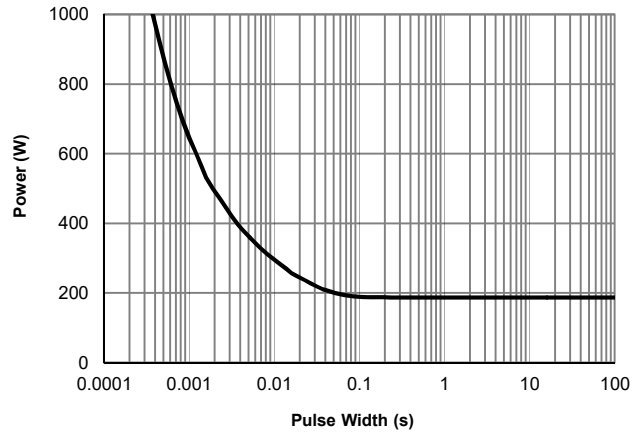


Figure 10: Single Pulse Power Rating, Junction-to-Case

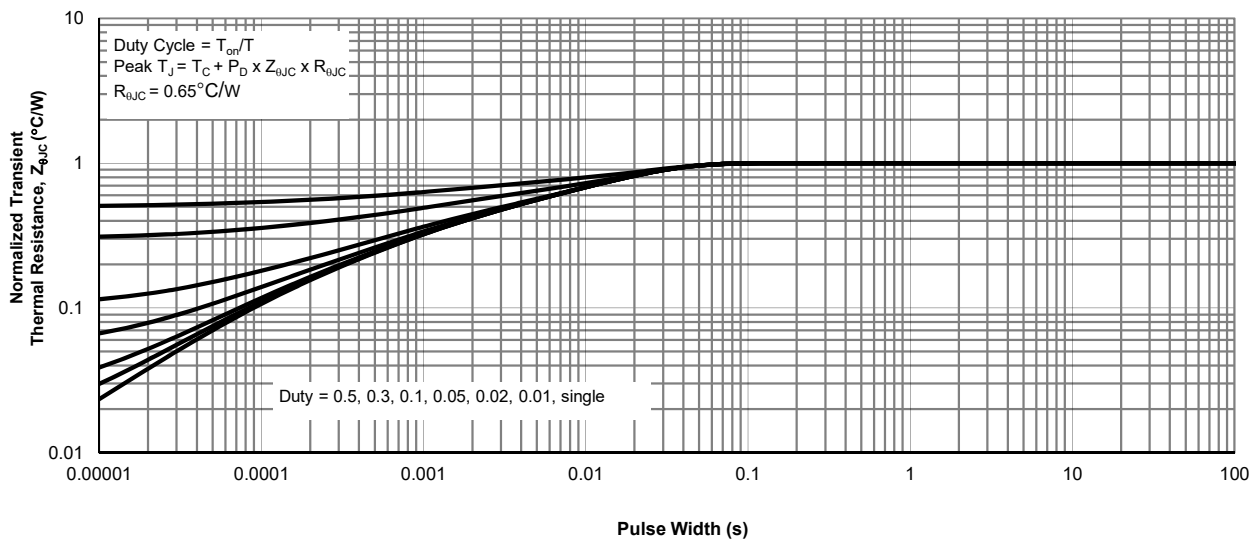
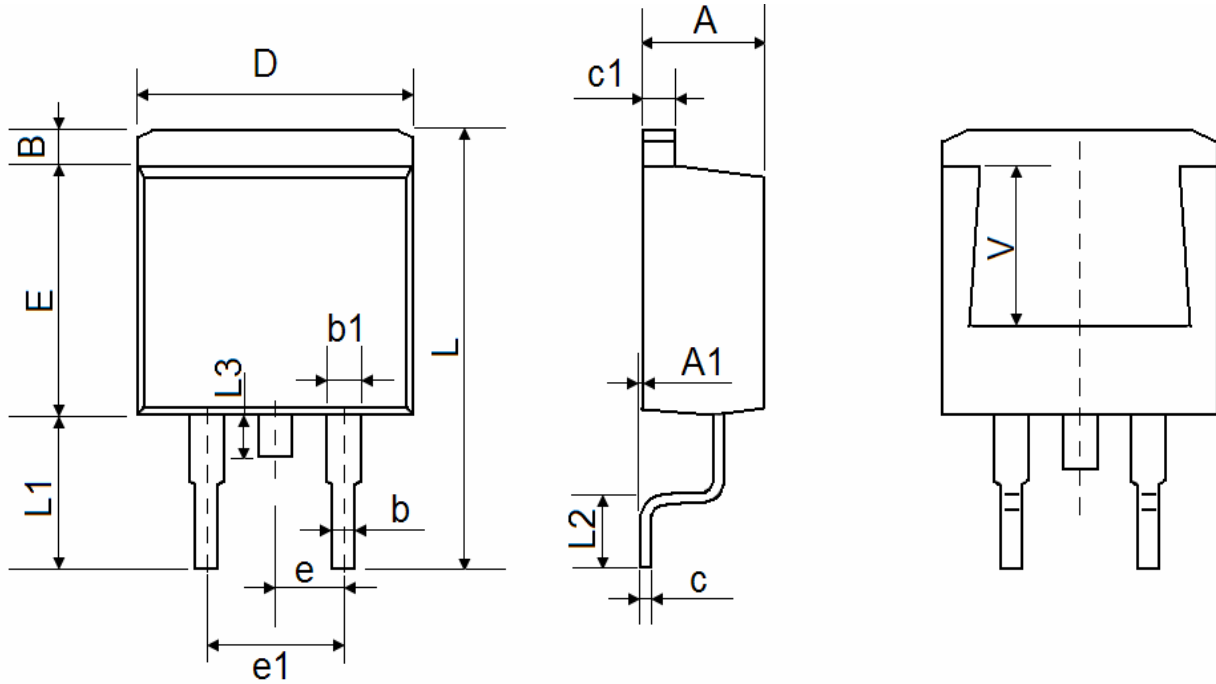


Figure 11: Normalized Maximum Transient Thermal Impedance

**TO-263 Package Outline Dimensions**



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