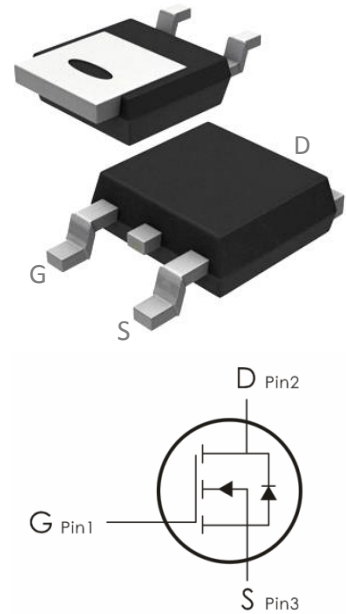


Description:

This N-Channel MOSFET uses advanced SGT technology and design to provide excellent $R_{DS(on)}$ with low gate charge. It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=40V, I_D=80A, R_{DS(ON)}<2.5m\Omega @V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ C$	80	A
	Continuous Drain Current- $T_C=125^\circ C$	59	
I_{DM}	Pulsed Drain Current ²	240	
I_{AR}	Avalanche Current, Repetitive ²	20	A
E_{AS}	Single Pulse Avalanche Energy ³	170	mJ
P_D	Power Dissipation	70	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.8	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction to ambient	62	$^\circ C/W$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=40V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	1.2	1.8	2.4	V
$R_{DS(on)}$	Drain-Source On Resistance	$V_{GS}=10V, I_D=35A$	---	2.1	2.5	m Ω
		$V_{GS}=4.5V, I_D=15A$	---	3.1	4.5	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=20V, V_{GS}=0V, f=1\text{MHz}$	---	2900	---	pF
C_{oss}	Output Capacitance		---	758	---	
C_{rss}	Reverse Transfer Capacitance		---	50	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=20V, V_{GS}=10V, R_G=1.6\ \Omega, I_D=35A$	---	9	---	ns
t_r	Rise Time		---	32	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	32	---	ns
t_f	Fall Time		---	7	---	ns
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=20V,$	---	6.1	---	nC
Q_{gs}	Gate-Source Charge	$I_D=35A$	---	4.7	---	nC

Q_{gd}	Gate-Drain "Miller" Charge	---	40	---	nC	
Drain-Source Diode Characteristics						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{SD}	Source-Drain Diode Forward Voltage ³	V _{GS} =0V, I _S =35A	---	0.84	---	V
trr	Continuous Source Current	V _R =20V, I _F =35A dI _F /dt=100A/us	---	52	---	ns
qrr	Pulsed Source Current		---	91	---	nC

Notes:

- Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.
- Repetitive Rating: Pulse width limited by maximum junction temperature
- I_{AS}= 20.0A, V_{DD}= 20V, R_G= 25 Ω, Starting T_J= 25°C

Typical Characteristics: (T_C=25°C unless otherwise noted)

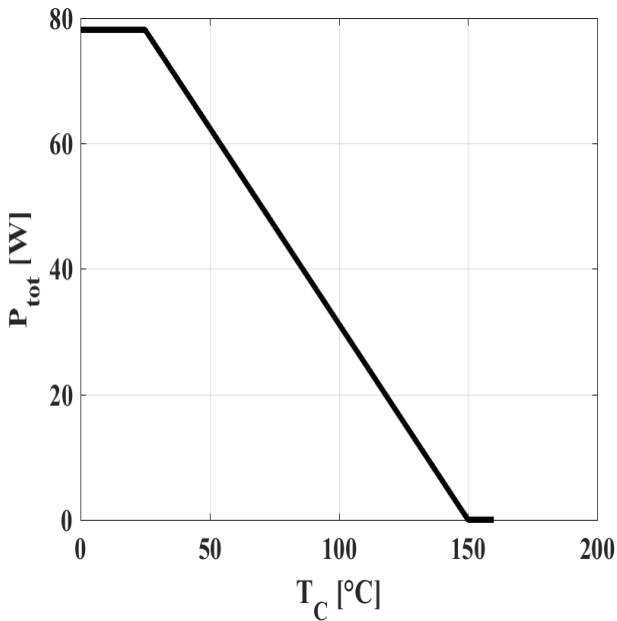


Figure 1: Power Dissipation

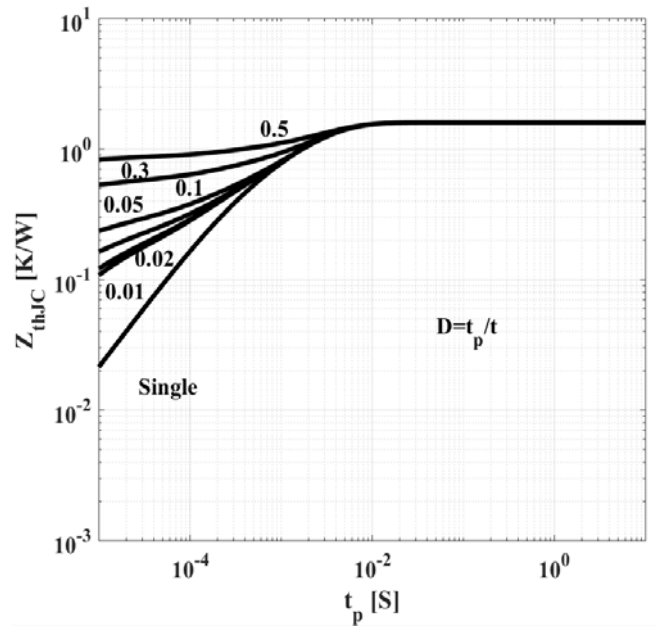


Figure 2: Max. Transient Thermal Impedance

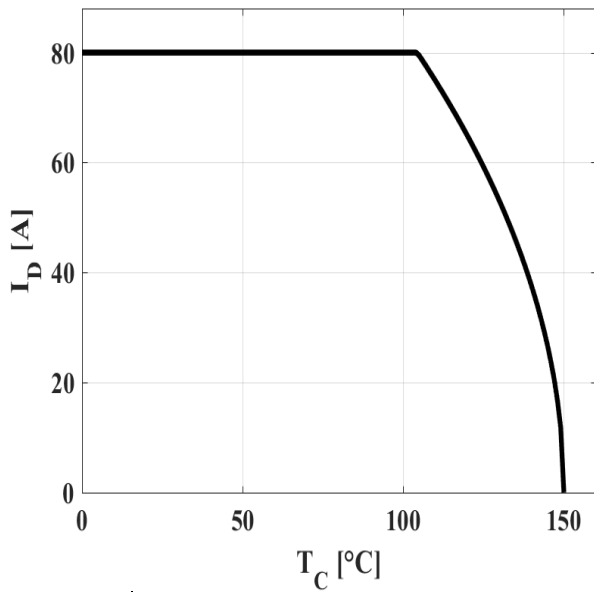


Figure3: Drain Current

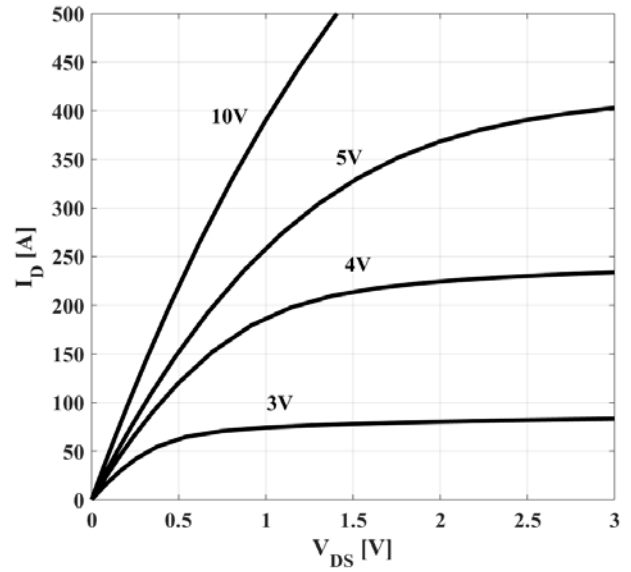


Figure4: Typ. Output Characteristics

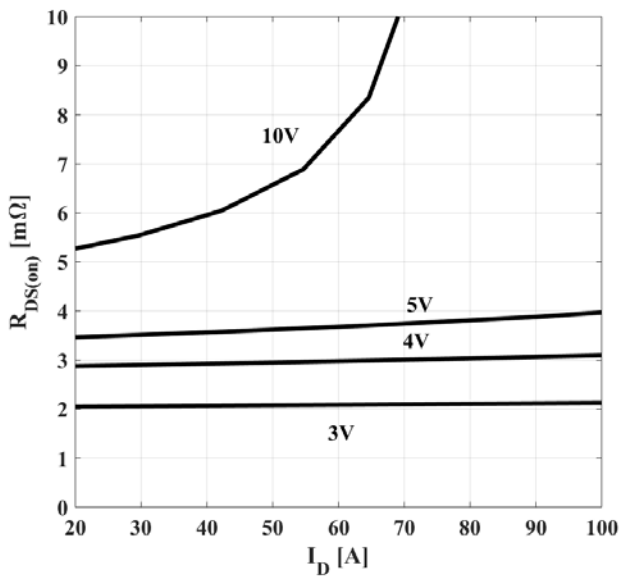


Figure5: Typ. Drain-Source On-State Resistance

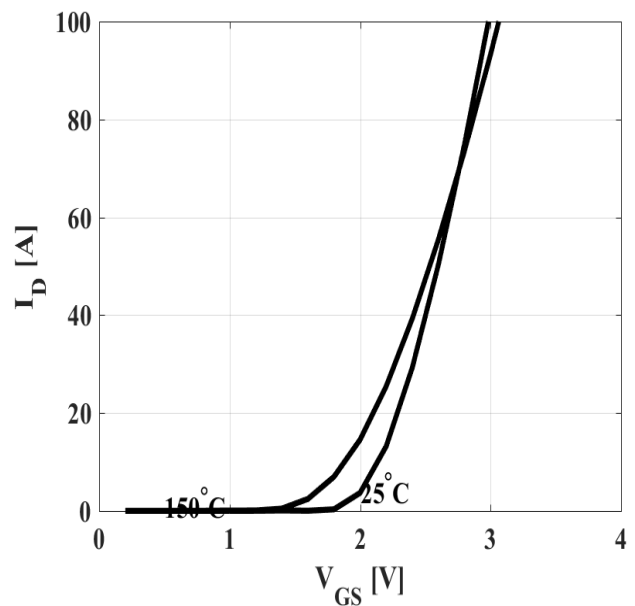


Figure6: Typ. Transfer Characteristics

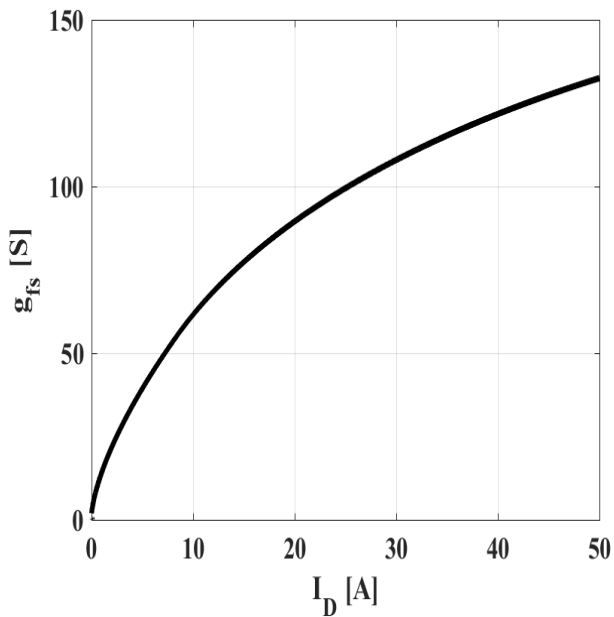


Figure7: Typ. Forward Transconductance

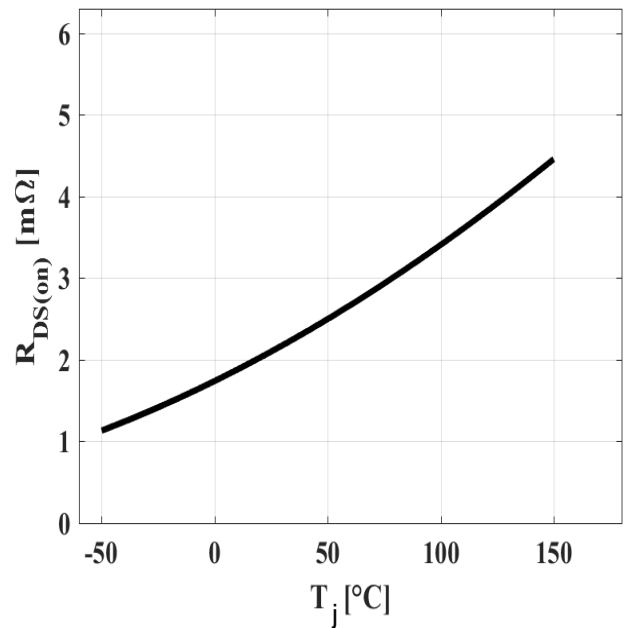


Figure8: Typ. Drain-Source On-State Resistance

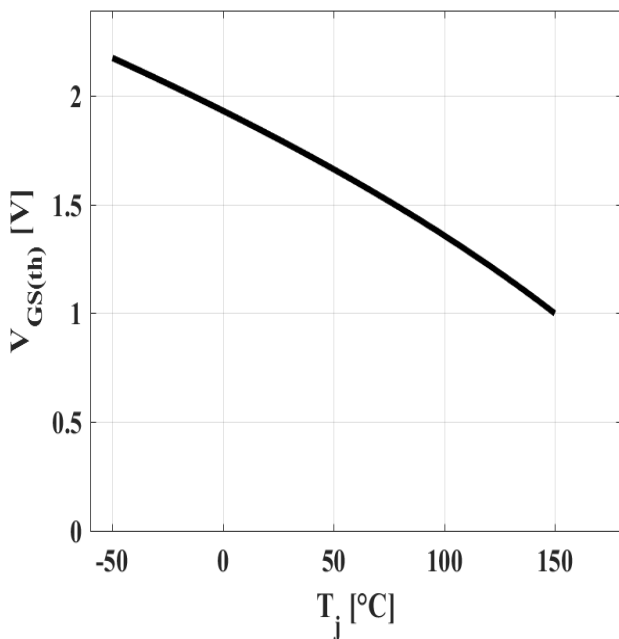


Figure9: Typ. Gate Threshold Voltage

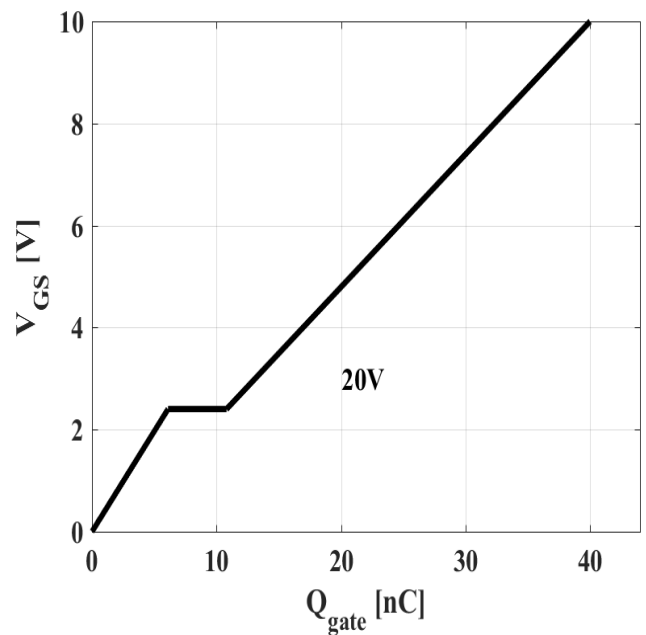


Figure 10: Typ. Gate Charge

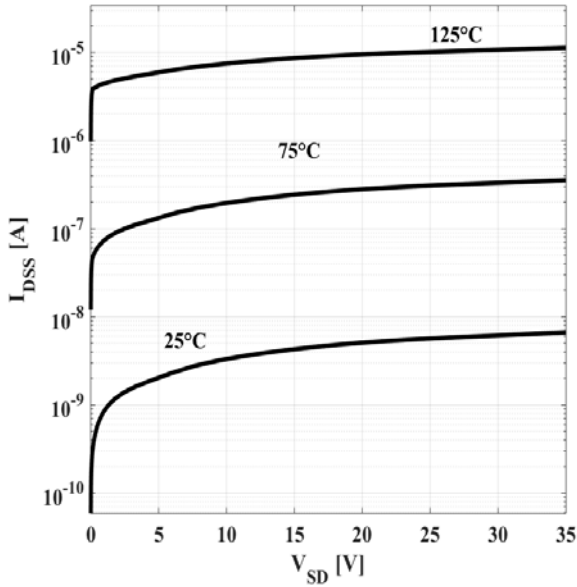


Figure 11: Drain-Source Leakage Current

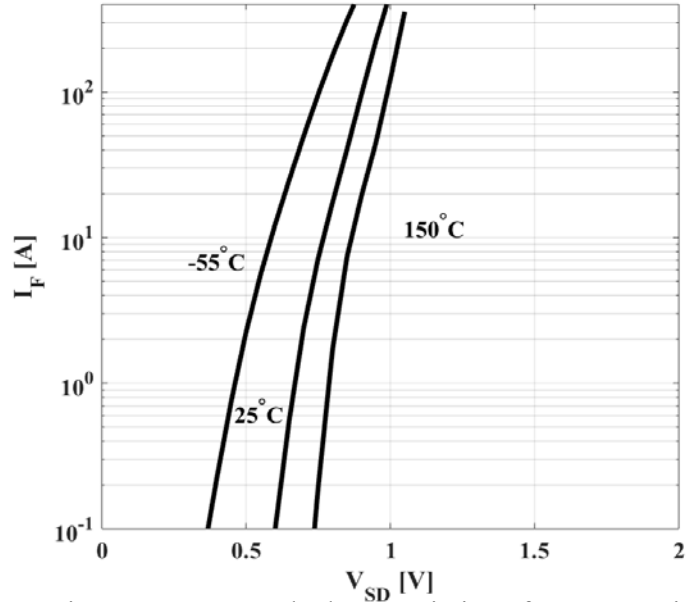


Figure 12: Forward Characteristics of Reverse Diode

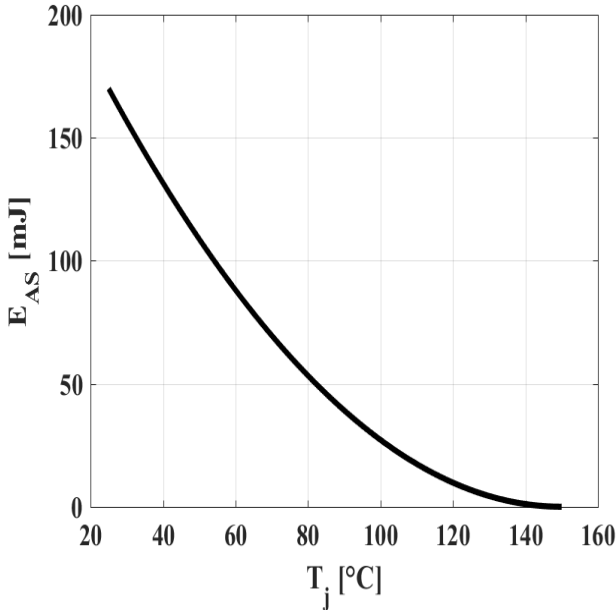


Figure 13: Avalanche Energy

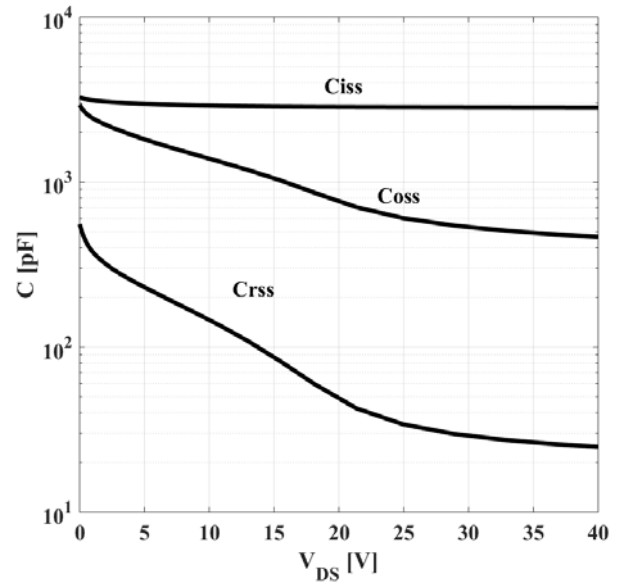


Figure 14: Typ. Capacitances

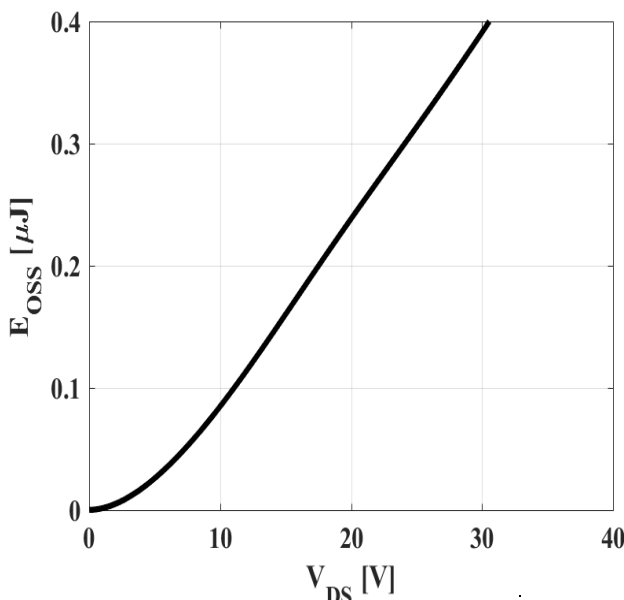


Figure 15: Coss Stored Energy



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