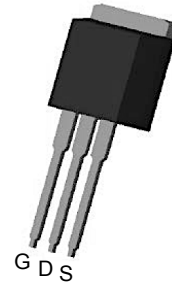
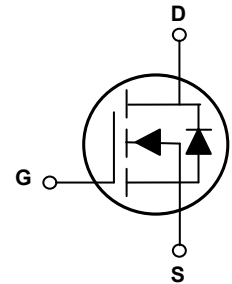


Main Product Characteristics

$V_{(BR)DSS}$	85V
$R_{DS(ON)}$	5.5m Ω (Max.)
I_D	120A



TO-262-3L



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



Description

The GSGDT5R585 utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supplies and a wide variety of other applications.

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	85	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ Steady-State ($T_A=25^\circ\text{C}$) ¹	I_D	120	A
Continuous Drain Current, @ Steady-State ($T_A=100^\circ\text{C}$)		90	A
Pulsed Drain Current ²	I_{DM}	480	A
Power Dissipation ($T_A=25^\circ\text{C}$)	P_D	300	W
Linear Derating Factor ($T_A=25^\circ\text{C}$)		2.4	W/ $^\circ\text{C}$
Single Pulse Avalanche Energy ³	E_{AS}	400	mJ
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.42	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State) ⁴	$R_{\theta JA}$	62.5	$^\circ\text{C}/\text{W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	85	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=85V, V_{GS}=0V$	-	-	1	μA
		$T_J=125^\circ\text{C}$	-	-	50	
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS}=20V$	-	-	100	nA
		$V_{GS}=-20V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=30A$	-	4.5	5.5	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.1	3	3.9	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=40V, f=1\text{MHz}$	-	4284	-	pF
Output Capacitance	C_{oss}		-	668	-	
Reverse Transfer Capacitance	C_{rss}		-	18	-	
Total Gate Charge	Q_g	$I_D=50A, V_{DS}=40V, V_{GS}=10V$	-	69	-	nC
Gate-to-Source Charge	Q_{gs}		-	30	-	
Gate-to-Drain ("Miller") Charge	Q_{gd}		-	16	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=40V, R_{GEN}=24\Omega, I_D=13.2A$	-	59	-	nS
Rise Time	t_r		-	82	-	
Turn-Off Delay Time	$t_{d(off)}$		-	126	-	
Fall Time	t_f		-	72	-	
Gate Resistance	R_g	$f=1\text{MHz}$	-	1.7	-	Ω
Drain-Source Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	120	A
Pulsed Source Current (Body Diode)	I_{SM}		-	-	480	A
Diode Forward Voltage	V_{SD}	$I_S=20A, V_{GS}=0V$	-	1.1	1.4	V
Reverse Recovery Time	t_{rr}	$T_J=25^\circ\text{C}, I_F=20A, di/dt=100A/\mu s$	-	53	-	nS
Reverse Recovery Charge	Q_{rr}		-	0.31	-	μC

Notes:

1. Pulse test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. $L=0.5mH, I_{AS}=40A, V_{DD}=72V, T_J=25^\circ\text{C}$.
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

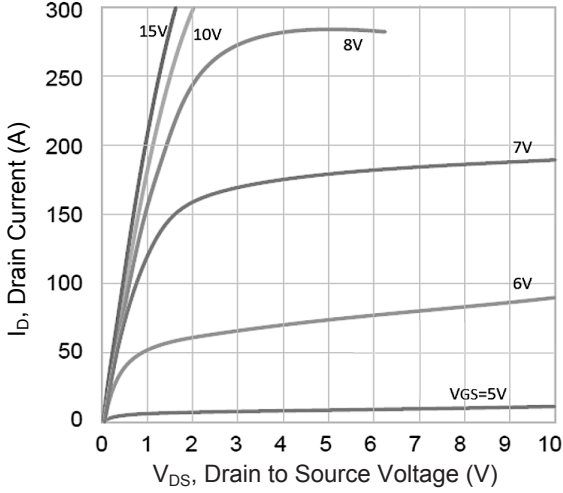


Figure 1. Typical Output Characteristics

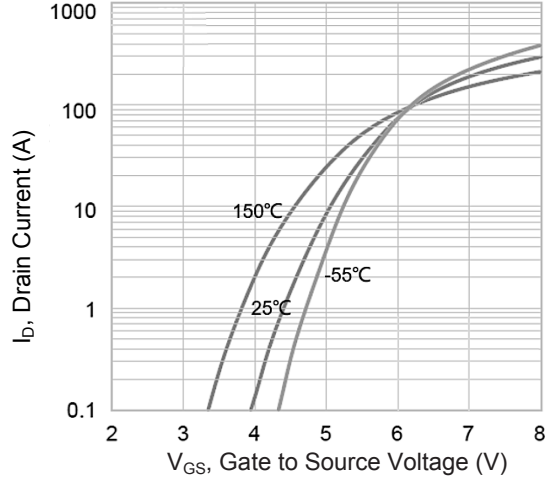


Figure 2. Transfer Characteristics

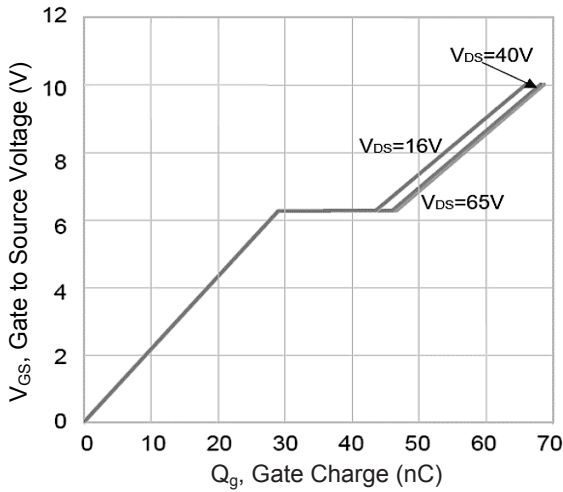


Figure 3. Gate Charge

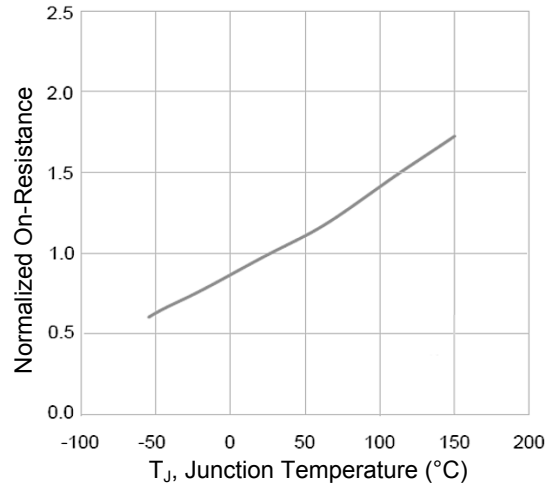


Figure 4. Normalized $R_{DS(ON)}$ vs. T_J

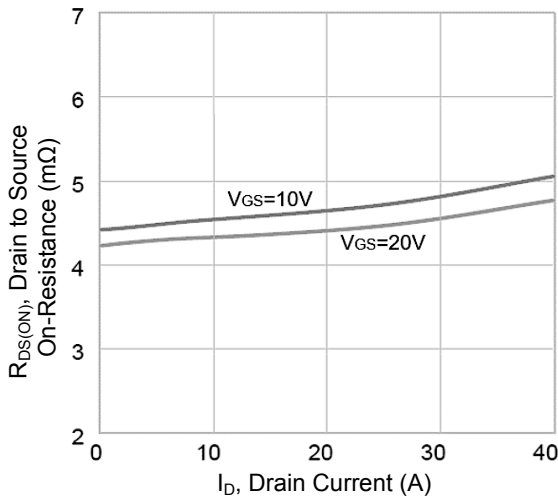


Figure 5. Drain to Source On-Resistance

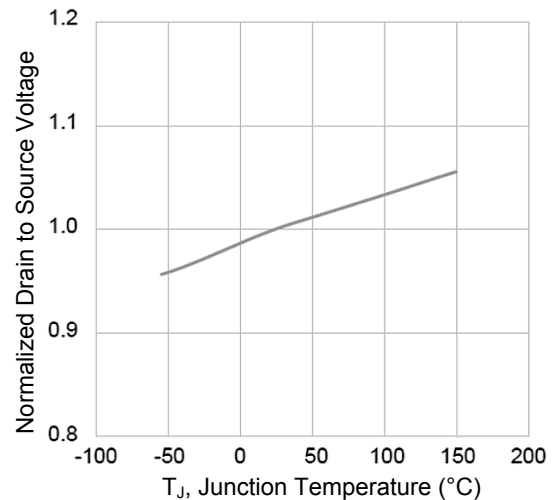


Figure 6. Normalized BV_{DS} vs. T_J

Typical Electrical and Thermal Characteristic Curves

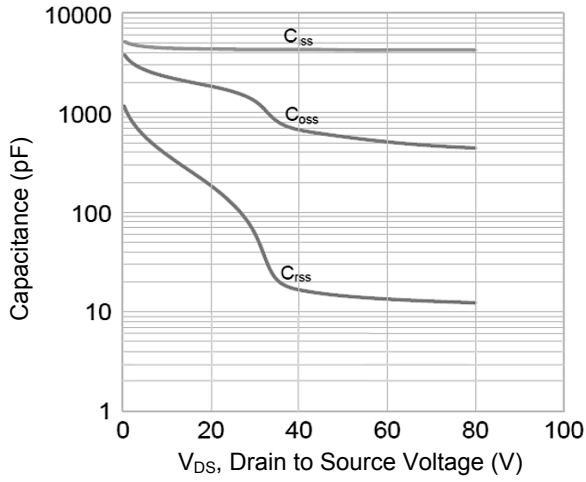


Figure 7. Typical Capacitance Characteristics

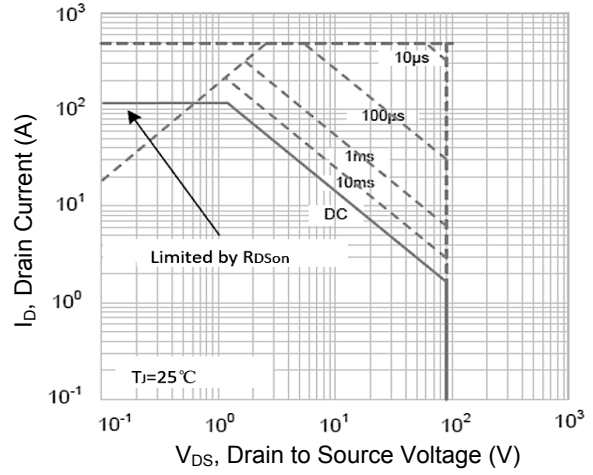
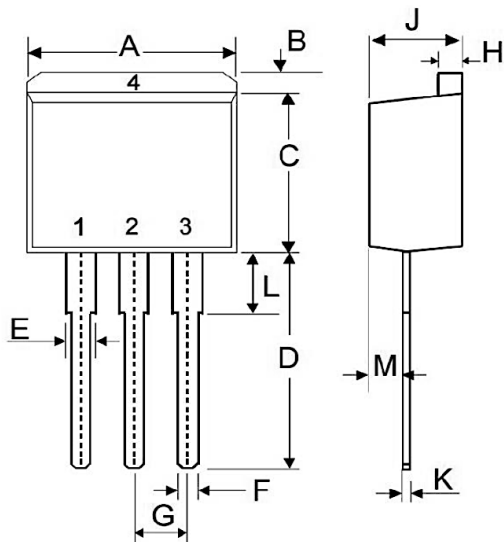


Figure 8. Safe Operation Area

Package Outline Dimensions (TO-262-3L)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	9.900	10.400	0.390	0.409
B	1.270 TYP		0.050 TYP	
C	8.500	8.900	0.335	0.350
D	13.300	13.800	0.524	0.543
E	1.120	1.420	0.044	0.056
F	0.660	0.960	0.026	0.038
G	2.540 TYP		0.100 TYP	
H	1.120	1.420	0.044	0.056
J	4.320	4.820	0.170	0.190
K	0.280	0.520	0.011	0.200
L	4.460	4.860	0.176	0.191
M	1.430	1.630	0.056	0.064

Order Information

Device	Package	Marking	Packaging	SPQ
GSGDT5R585	TO-262-3L	DT5R585	Tube	50 Pcs / Tube