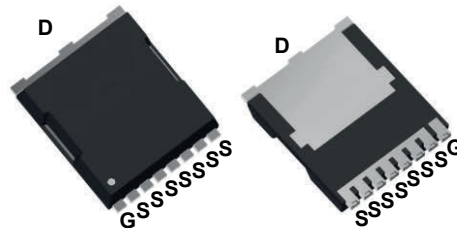
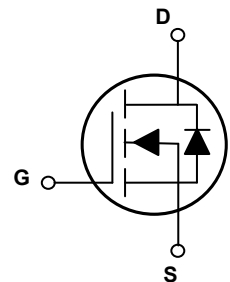


Main Product Characteristics

$V_{(BR)DSS}$	250V
$R_{DS(ON)}$	60m Ω (max.)
I_D	50A



TOLL



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 GSFTL60025 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	Parameter	Unit
Drain-Source Voltage	V_{DS}	250	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ Steady-State ($T_C=25^{\circ}\text{C}$)	I_D	50	A
Continuous Drain Current, @ Steady-State ($T_C=100^{\circ}\text{C}$)		31	A
Pulsed Drain Current	I_{DM}	200	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	403	W
		3.2	W/ $^{\circ}\text{C}$
Single Pulse Avalanche Energy ¹	E_{AS}	230	mJ
Single Pulse Avalanche Current	I_{AS}	6.6	A
Body Diode Reverse Voltage Slope ²	dv/dt	4.5	V/ns
MOS dv/dt Ruggedness ³	dv/dt	50	V/ns
Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	50	$^{\circ}\text{C/W}$
Junction-to-Case	$R_{\theta JC}$	0.31	$^{\circ}\text{C/W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	$^{\circ}\text{C}$
Soldering Temperature	T_{sld}	260	$^{\circ}\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	250	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=250V, V_{GS}=0V, T_J=25^\circ\text{C}$	-	-	1.0	μA
Gate-to-Source Forward Leakage	I_{GSS}	$V_{DS}=0V, V_{GS}=20V$	-	-	100	nA
		$V_{DS}=0V, V_{GS}=-20V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=25A$	-	48	60	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	3.0	-	5.0	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=25V, f=1\text{MHz}$	-	6726	-	pF
Output Capacitance	C_{oss}		-	512	-	
Reverse Transfer Capacitance	C_{rss}		-	223	-	
Total Gate Charge ^{4,5}	Q_g	$I_D=6.0A, V_{DD}=560V, V_{GS}=10V$	-	128	-	nC
Gate-to-Source Charge ^{4,5}	Q_{gs}		-	40	-	
Gate-to-Drain ("Miller") Charge ^{4,5}	Q_{gd}		-	45	-	
Turn-on Delay Time ^{4,5}	$t_{d(on)}$	$V_{DD}=125V, V_{GS}=15V, R_G=3.3\Omega, I_D=25A$	-	26	-	nS
Rise Time ^{4,5}	t_r		-	31	-	
Turn-Off Delay Time ^{4,5}	$t_{d(off)}$		-	87	-	
Fall Time ^{4,5}	t_f		-	24	-	
Gate Resistance	R_g	$f=1\text{MHz}$	-	1.5	-	Ω
Source-Drain Ratings and Characteristics						
Diode Forward Voltage	V_{SD}	$I_S=50A, V_{GS}=0V$	-	-	1.4	V
Reverse Recovery Time ⁴	T_{rr}	$I_S=25A, V_{GS}=0V, di_F/dt=250A/\mu s$	-	184	-	nS
Reverse Recovery Charge ⁴	Q_{rr}		-	1.2	-	μC

Note:

1. $L=79\text{mH}, V_{DD}=100V, R_G=25\Omega, T_J=25^\circ\text{C}$.
2. $V_{DS}=0-400V, I_{SD}\leq I_S, T_J=25^\circ\text{C}$.
3. $V_{DS}=0-480V$.
4. Pulse test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
5. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

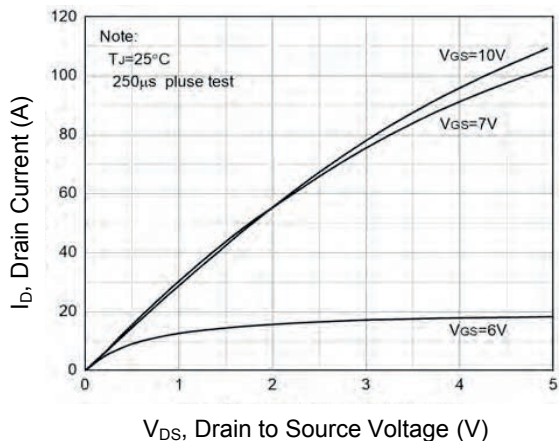


Figure 1. Typical Output Characteristics

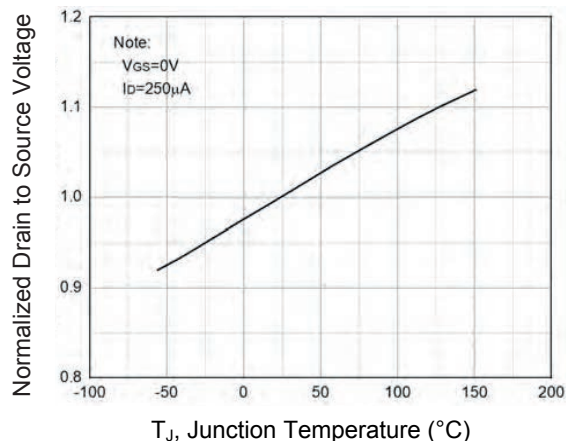


Figure 2. Normalized BV_{DSS} vs. T_J

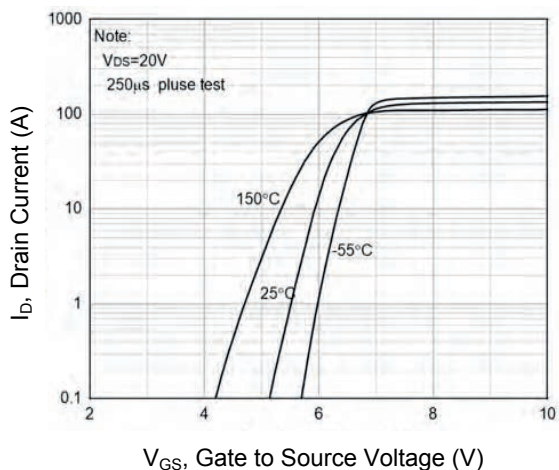


Figure 3. Transfer Characteristics

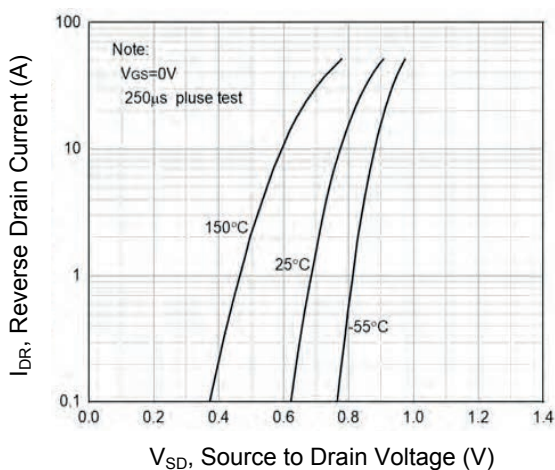


Figure 4. Body Diode Characteristics

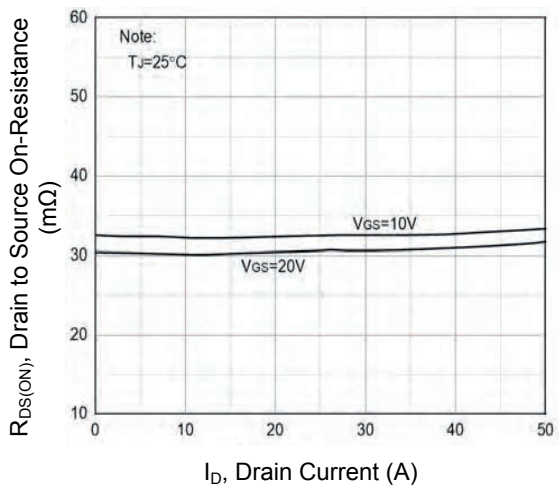


Figure 5. $R_{DS(ON)}$ vs. Drain Current

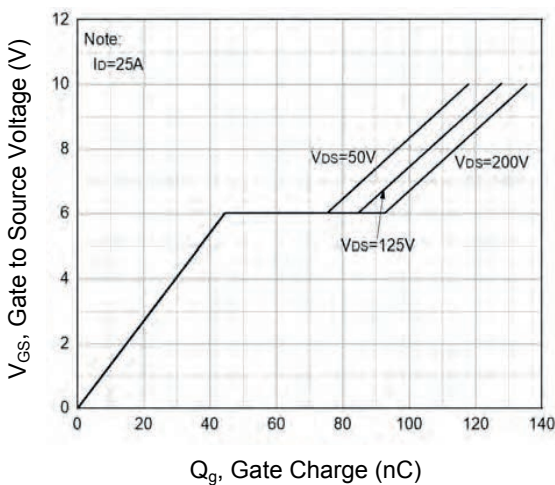


Figure 6. Gate Charge Characteristics

Typical Electrical and Thermal Characteristic Curves

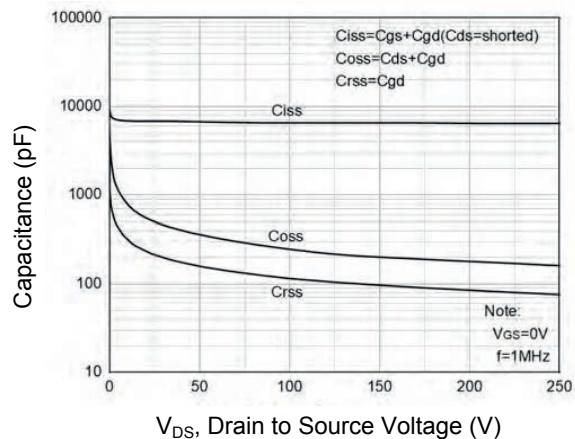


Figure 7. Capacitance Characteristics

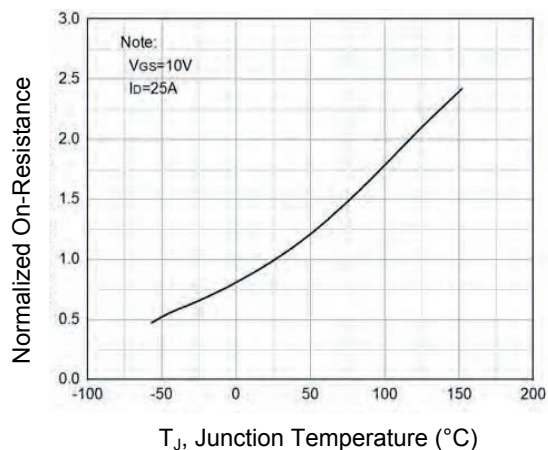


Figure 8. Normalized $R_{DS(ON)}$ vs. T_J

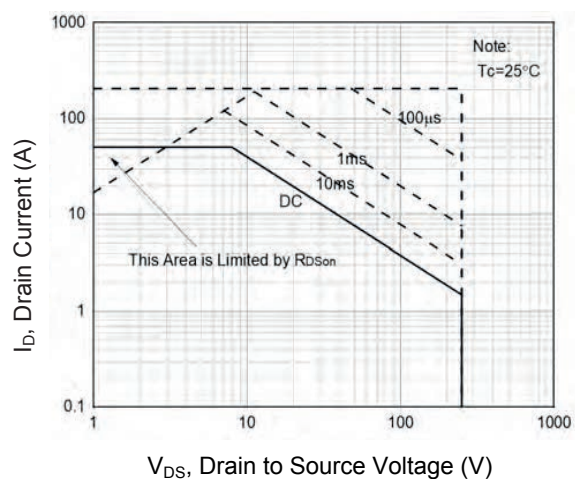
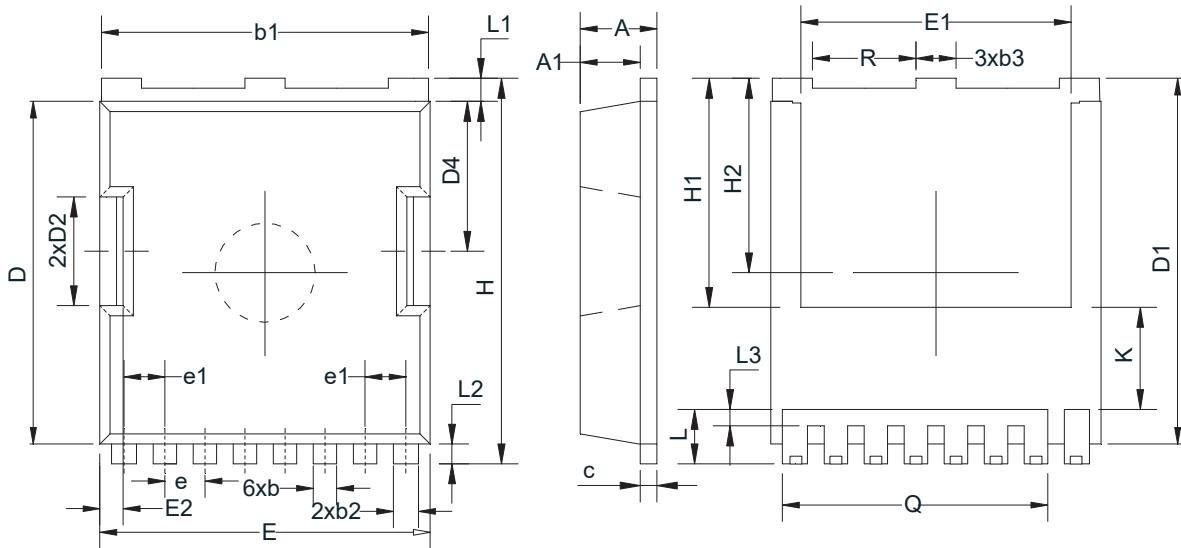


Figure 9. Safe Operation Area

Package Outline Dimensions (TOLL)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.25	2.35	0.089	0.093
A1	1.75	1.85	0.069	0.073
b	0.65	0.75	0.026	0.030
b1	9.75	9.85	0.384	0.388
b2	0.70	0.80	0.028	0.031
b3	1.15	1.25	0.045	0.049
c	0.45	0.55	0.018	0.022
D	10.35	10.45	0.407	0.411
D1	11.00	11.20	0.433	0.441
D2	3.25	3.35	0.128	0.132
D4	4.50	4.60	0.177	0.181
e	1.200 BSC		0.047 BSC	
e1	1.225 BSC		0.048 BSC	
E	9.85	9.95	0.388	0.392
E1	8.00	8.20	0.315	0.323
E2	0.65	0.75	0.026	0.030
H	11.60	11.80	0.457	0.465
H1	6.95 BSC		0.274 BSC	
H2	5.90 BSC		0.232 BSC	
K	3.10 REF		0.122 REF	
L	1.55	1.75	0.061	0.069
L1	0.65	0.75	0.026	0.030
L2	0.50	0.70	0.020	0.028
L3	0.40	0.60	0.016	0.024
Q	7.95 REF		0.313 REF	
R	3.05	3.15	0.120	0.124

Order Information

Device	Package	Marking	Carrier	Quantity
GSFTL60025	TOLL	TL60025	Tape & Reel	2,000 Pcs / Reel

For more information, please contact us at: inquiry@goodarksemi.com