

1.Features

- $V_{DS(V)} = -60V$
- $R_{DS(ON)} < 27m\Omega (V_{GS} = -10V)$
- $R_{DS(ON)} < 35m\Omega (V_{GS} = -4.5V)$
- Very low on-resistance
- Very low gate charge
- High avalanche ruggedness
- Low gate drive power loss

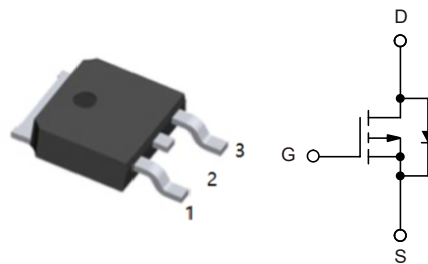
2.Applications

- Switching applications

3.Pinning information

Pin	Symbol	Description
1	G	GATE
2	D	DRAIN
3	S	SOURCE

TO-252(DPAK)
top view



4.Absolute Maximum Ratings $T_A = 25^\circ C$

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain current (continuous) at $T_C = 25^\circ C$	I_D	-35	A
Drain current (continuous) at $T_C = 100^\circ C$		-25	
Drain current (pulsed)	$I_{DM}^{(1)}$	140	
Total dissipation at $T_C = 25^\circ C$	P_{TOT}	70	W
Storage temperature range	T_{STG}	-55 to 175	$^\circ C$
Junction temperature range	T_J	-55 to 175	$^\circ C$

Notes:

⁽¹⁾Pulse width limited by safe operating area.



5.Thermal Resistance Rating

Parameter	Symbol	Value	Units
Thermal resistance junction-case max	$R_{thj-case}$	2.14	°C/W



6. Electrical characteristics ($T_c = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	-60			V
Zero gate voltage drain current	I_{DSS}	$V_{GS}=0V, V_{DS}=-60V$			-1	μA
		$V_{GS}=0V, V_{DS}=-60V, T_C=125^{\circ}C^{(1)}$			-10	μA
Gate-body leakage current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.1	-1.8	-2.5	V
Static drain-source on-resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-17.5A$		25	27	m Ω
		$V_{GS}=-4.5V, I_D=-17.5A$		30	35	m Ω
Dynamic						
Input Capacitance	C_{iss}	$V_{DS}=-25V, V_{GS}=0V, f=1MHz$		3780		pF
Output Capacitance	C_{oss}			262		pF
Reverse Transfer Capacitance	C_{rss}			170		pF
Total Gate Charge	Q_g	$V_{DD}=-30V, I_D=-35A$ $V_{GS}=0$ to $-4.5V$ (see Figure 14: "Gate charge test circuit")		30		nC
Gate-Source Charge	Q_{gs}			10.8		nC
Gate-Drain Charge	Q_{gd}			10.5		nC
Gate input resistance	R_g	$I_D=0A$, gate DC bias=0V, $f=1\text{ MHz}$, magnitude of alternative signal=20mV		1.7		Ω
Switching times						
Turn-on delay time	$t_{D(on)}$	$V_{DD}=-30V, I_D=-17.5A, R_G=4.7\Omega$, $V_{GS}=-10V$ (see Figure 13: " Switching times test circuit for resistive load")		51.4		ns
Rise time	t_r			39		ns
Turn-off-delay time	$t_{D(off)}$			171		ns
Fall time	t_f			21		ns



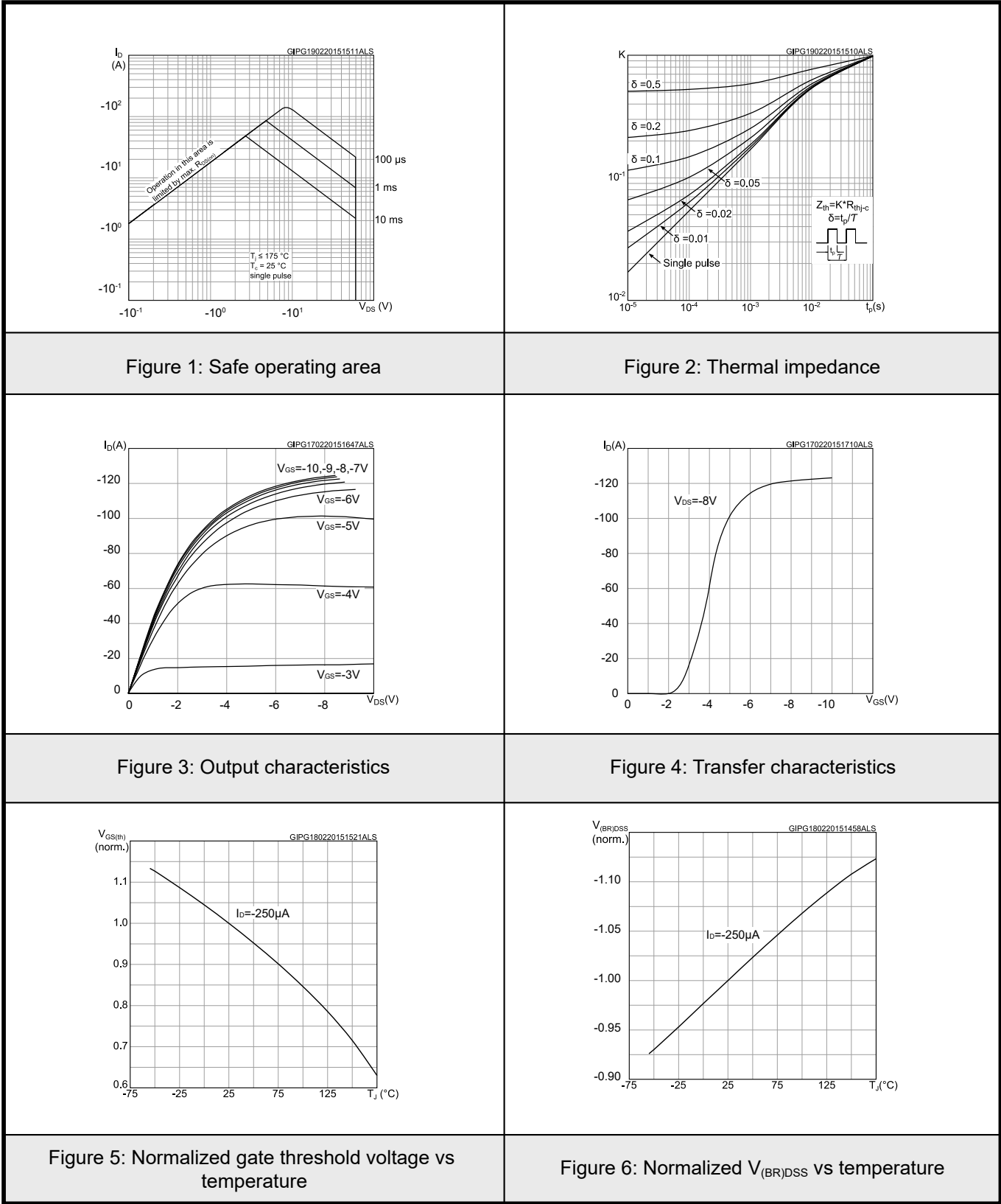
Source drain diode						
Forward on voltage	$V_{SD}^{(1)}$	$V_{GS}=0V, I_{SD}=-35A$			-1.5	V
Reverse recovery time	t_{rr}	$I_{SD}=-35A, di/dt=100A/\mu s, V_{DD}=-48V, (see Figure 15: "Test circuit for inductive load switching and diode recovery times")$		34		ns
Reverse recovery charge	Q_{rr}			48		nC
Reverse recovery current	I_{RRM}			-2.8		A

Notes:

⁽¹⁾Pulse test: pulse duration = 300 μs , duty cycle 1.5%



7.1 Typical Characteristics





7.2 Typical Characteristics

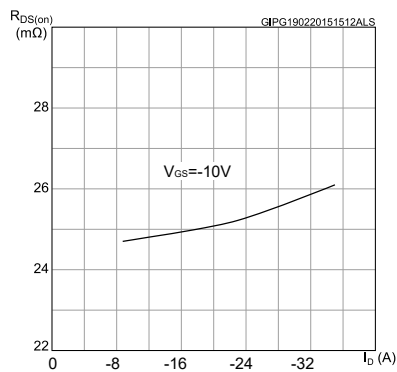


Figure 7: Static drain-source on-resistance

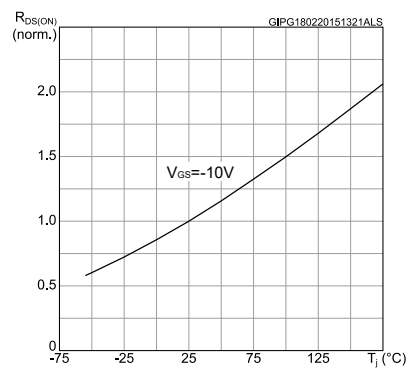


Figure 8: Normalized on-resistance vs. temperature

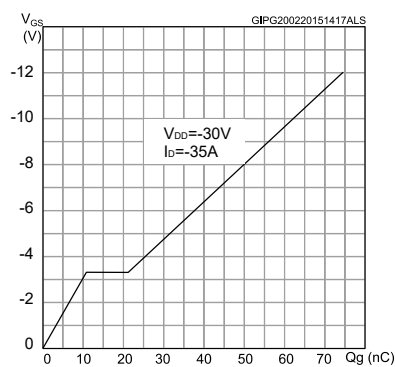


Figure 9: Gate charge vs gate-source voltage

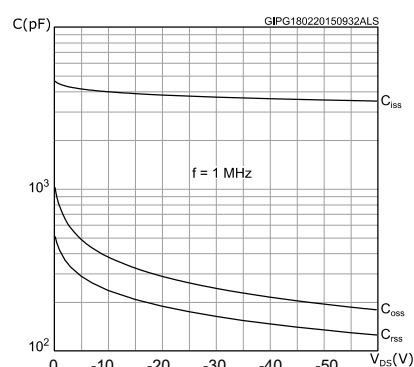


Figure 10: Capacitance variations voltage

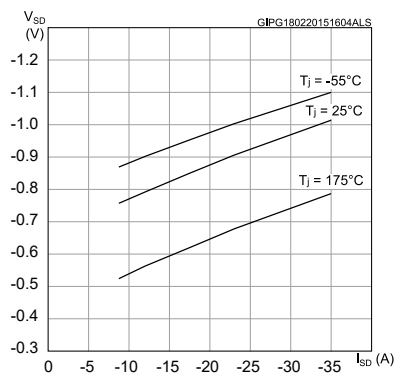
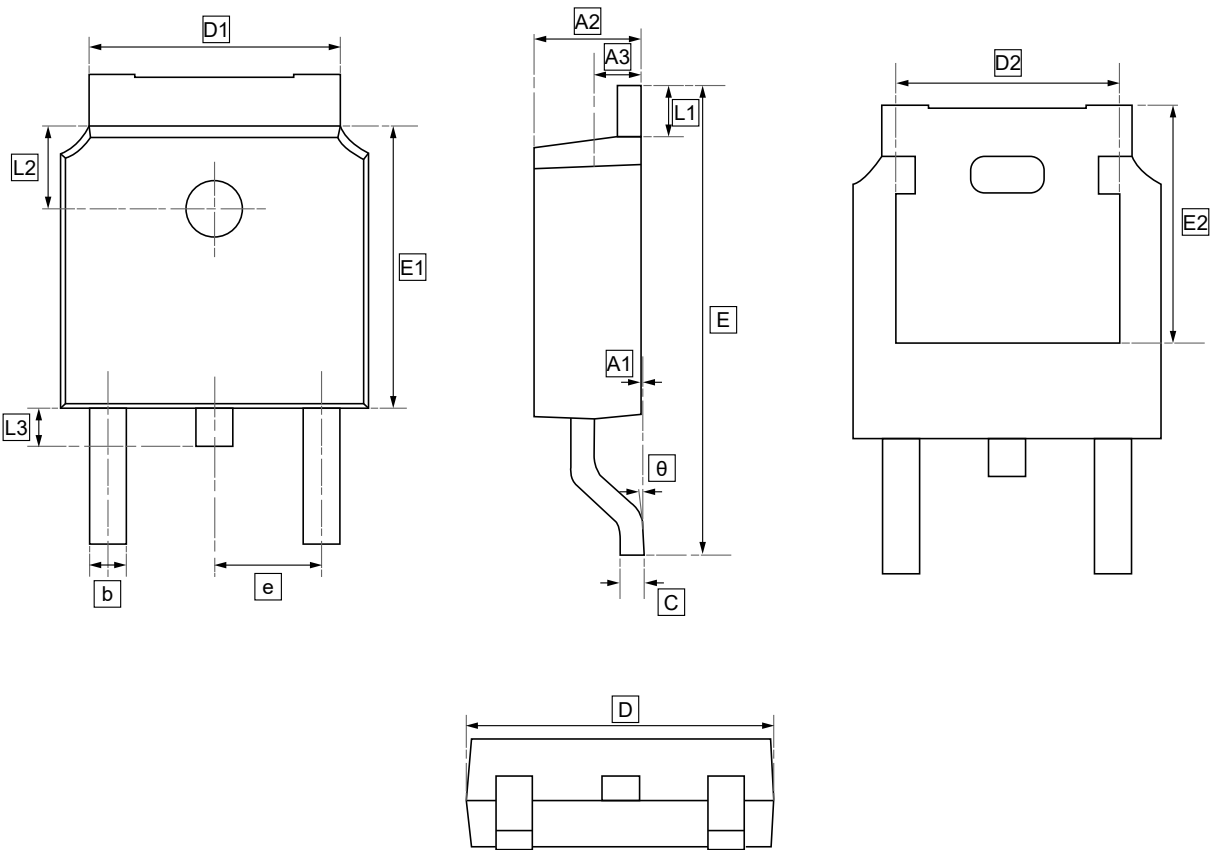


Figure 11: Source-drain diode forward characteristics



8.TO-252 Package Outline Dimensions

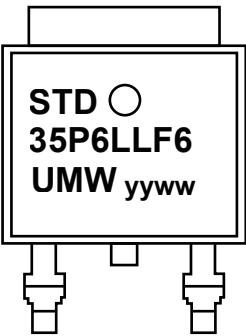


DIMENSIONS (mm are the original dimensions)

Symbol	A1	A2	A3	b	c	D	D1	D2	E	E1	E2	e	L1	L2	L3	θ
Min	0.00	2.18	0.90	0.65	0.46	6.35	4.95	4.32	9.40	5.97	5.21	2.286 BSC	0.89	1.70	0.60	0.00
Max	0.13	2.39	1.10	0.85	0.61	6.73	5.46	4.90	10.41	6.22	5.38		1.27	1.90	1.00	8.00



9.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW STD35P6LLF6	TO-252	2500	Tape and reel



10.Disclaimer

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