

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	2.8mΩ@10V	150A

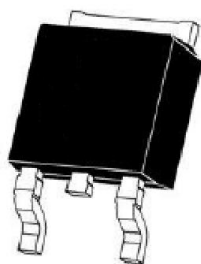
Feature

- Advanced SGT technology
- Excellent $R_{DS(on)}$
- Low gate charge

Application

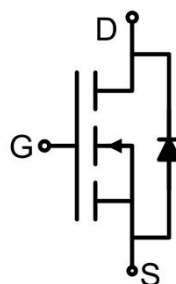
- Battery protection
- Uninterruptible power supply (UPS)

Package

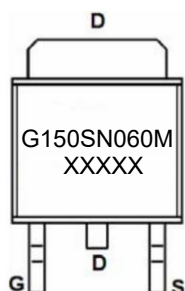


TO-252AB

Circuit diagram



Marking



Absolute maximum ratings (Tc=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹⁾	I_D	150	A
Continuous Drain Current ¹⁾ (Tc=100°C)	$I_D(100^\circ\text{C})$	105	A
Pulsed Drain Current	I_{DM}	450	A
Single Pulse Avalanche Energy ²⁾	E_{AS}	585	mJ
Power Dissipation ³⁾	P_D	168	W
Thermal Resistance Junction-to-Case ¹⁾	$R_{\theta JC}$	0.75	°C/W
Operating Junction Temperature	T_J	-55 ~ +150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

Electrical characteristics (Tj=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	2.8	4	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		2.1	2.8	mΩ
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f =1MHz		4080		pF
Output Capacitance	C _{oss}			1053		
Reverse Transfer Capacitance	C _{rss}			31		
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =20A		68		nC
Gate-Source Charge	Q _{gs}			16		
Gate-Drain Charge	Q _{gd}			20.5		
Turn-on delay time	t _{d(on)}	V _{DS} =30V, V _{GS} =10V, I _D =20A R _G =3Ω		17		nS
Turn-on rise time	t _r			17.8		
Turn-off delay time	t _{d(off)}			40		
Turn-off fall time	t _f			21		
Source-Drain Diode characteristics						
Diode Forward Current	I _S	T _C =25°C			150	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =20A			1.2	V
Reverse recovery time	T _{rr}	I _F =20A, di/dt =100A/μs		56		nS
Reverse recovery charge	Q _{rr}			67.5		nC

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2) The power dissipation is limited by 150°C junction temperature.
- 3) EAS condition: $T_J = 25^\circ\text{C}$, $V_{DD} = 48V$, $V_G = 10V$, $R_G = 25\Omega$, $L = 0.1mH$, $I_{AS} = 55A$.
- 4) Guaranteed by design, not subject to production.

Typical Characteristics

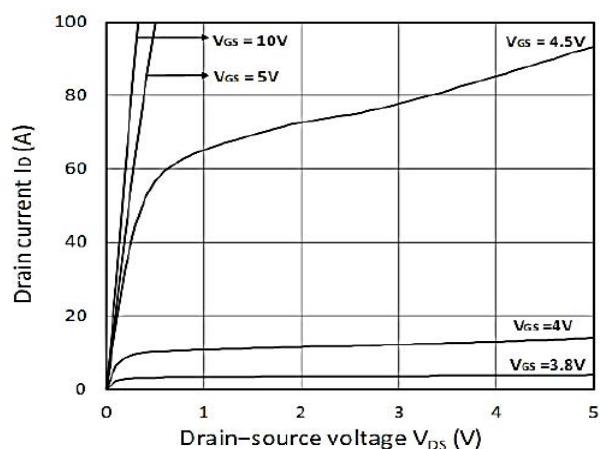


Figure 1. Output Characteristics

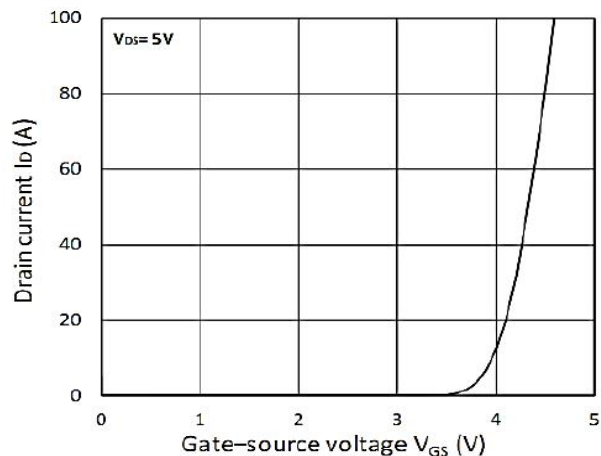


Figure 2. Transfer Characteristics

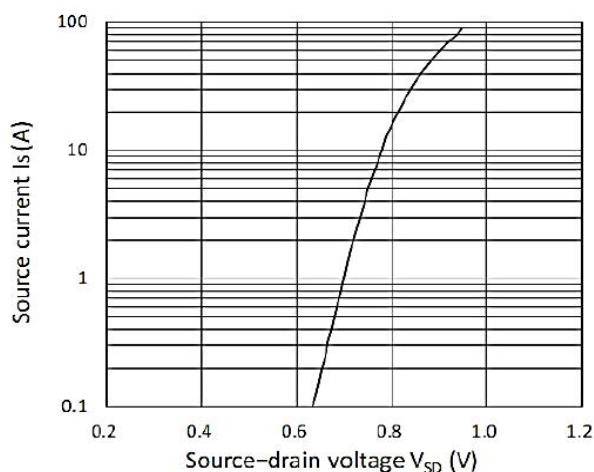


Figure 3. Forward Characteristics of Reverse

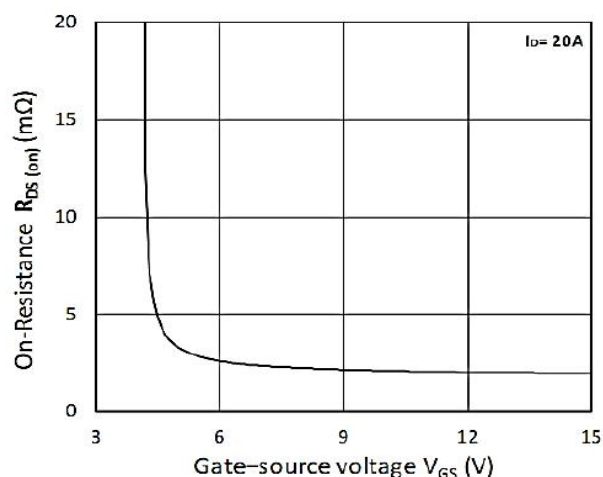


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

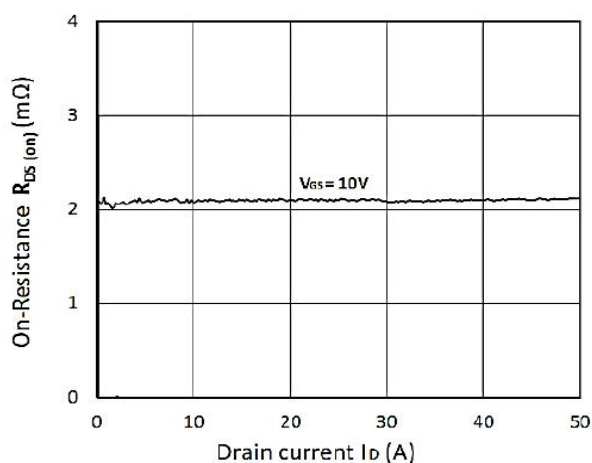


Figure 5. $R_{DS(ON)}$ vs. I_D

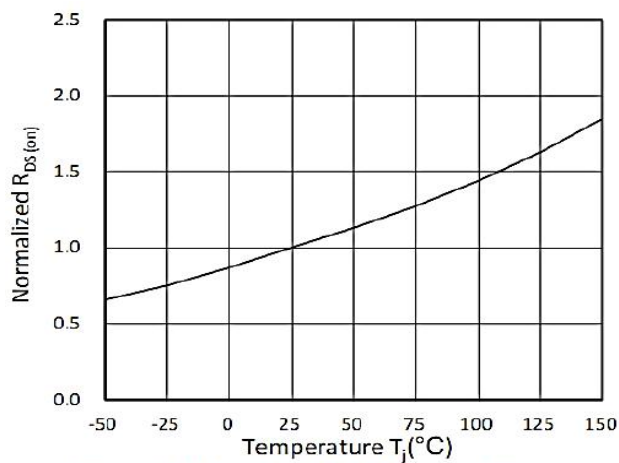


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

Typical Characteristics

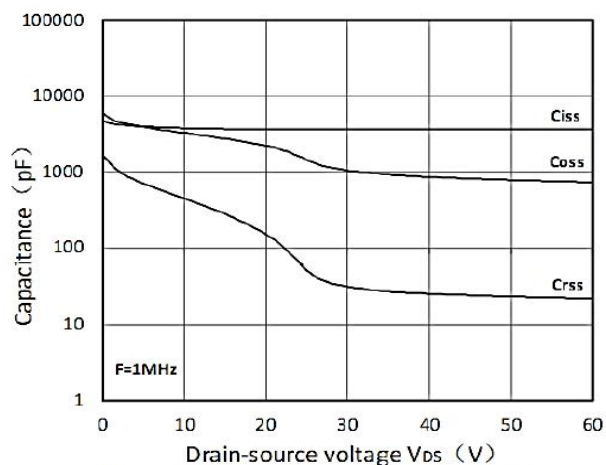


Figure 7. Capacitance Characteristics

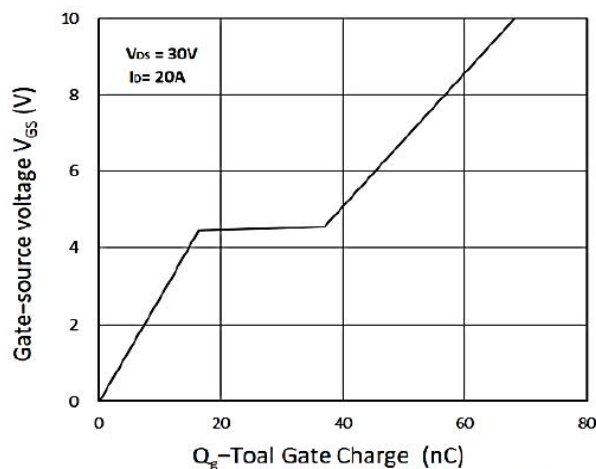


Figure 8. Gate Charge Characteristics

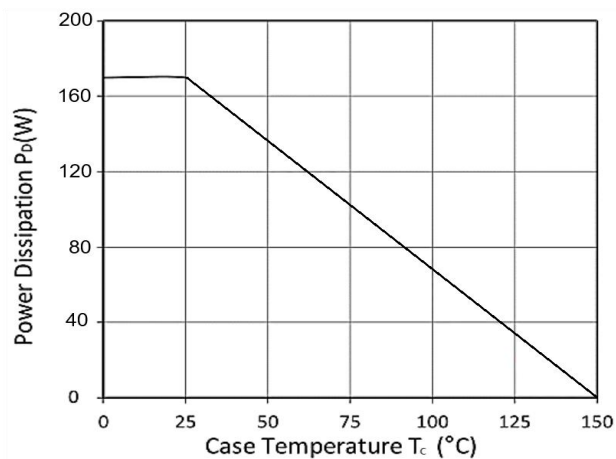


Figure 9. Power Dissipation

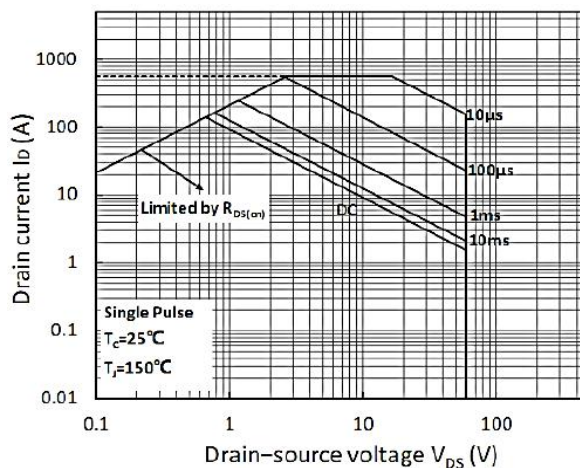


Figure 10. Safe Operating Area

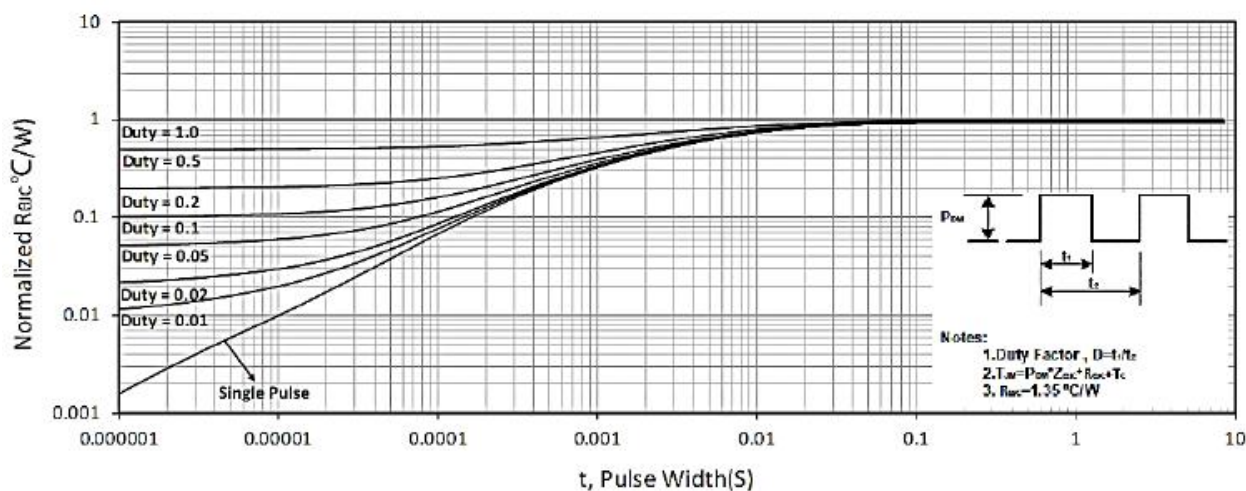
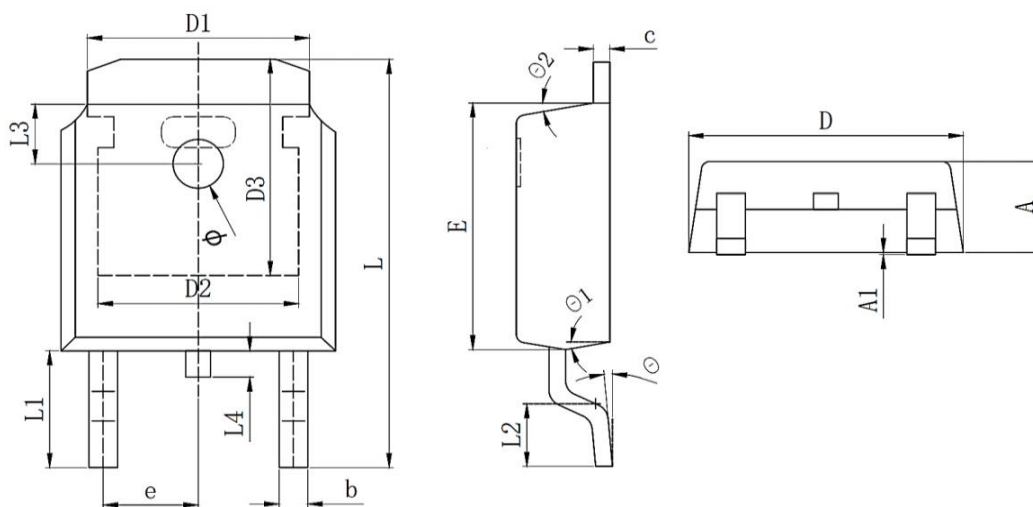


Figure 11. Normalized Maximum Transient Thermal Impedance

TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.100	2.500	0.083	0.098
A1	0.000	0.128	0.000	0.005
b	0.640	0.860	0.025	0.034
c	0.450	0.600	0.018	0.024
D	6.400	6.800	0.252	0.268
D1	5.330 REF.		0.210 REF.	
D2	4.830 REF.		0.190 REF.	
D3	5.250 REF.		0.207 REF.	
E	5.900	6.300	0.232	0.248
e	2.286 BSC.		0.090 BSC.	
L	9.800	10.400	0.386	0.409
L1	2.888 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.650 REF.		0.065 REF.	
L4	0.600	1.000	0.024	0.039
ϕ	1.100	1.300	0.043	0.051
θ	0°	10°	0°	10°
θ_1	5°	10°	5°	10°
θ_2	5°	10°	5°	10°