

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
150V	45mΩ@10V	40A

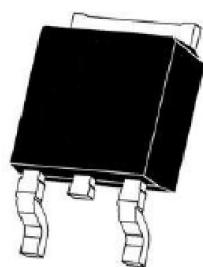
Feature

- High density cell design for ultra low $R_{DS(on)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation

Application

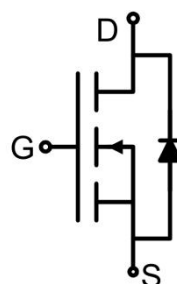
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

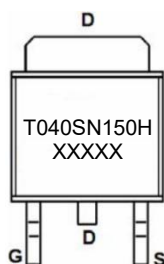


TO-252AB

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	150	V
Gate-Source Voltage	V _{GS}	±12	V
Continuous Drain Current	I _D	40	A
Continuous Drain Current (T _c =100°C)	I _D (100°C)	29	A
Pulsed Drain Current Tested	I _{DM}	160	A
Single Pulse Avalanche Energy ¹⁾	E _{AS}	350	mJ
Power Dissipation	P _D	140	W
Thermal Resistance Junction to Case ²⁾	R _{θJC}	1.07	°C/W
Operating Junction Temperature	T _J	-55 ~ +175	°C
Storage Temperature Range	T _{STG}	-55 ~ +175	°C

Electrical characteristics (T_c=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	150			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =150V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.7	1.05	1.4	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =18A		35	45	mΩ
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =75V, V _{GS} =0V, f =1MHz		4300		pF
Output Capacitance	C _{oss}			130		
Reverse Transfer Capacitance	C _{rss}			111		
Total Gate Charge	Q _g	V _{DS} =75V, V _{GS} =4.5V, I _D =18A		63.8		nC
Gate-Source Charge	Q _{gs}			9.8		
Gate-Drain Charge	Q _{gd}			26.9		
Turn-on delay time	t _{d(on)}	V _{DS} =30V, V _{GS} =10V, I _D =2A R _G =2.5Ω, R _L =15Ω		14		nS
Turn-on rise time	t _r			12		
Turn-off delay time	t _{d(off)}			45		
Turn-off fall time	t _f			11		
Source-Drain Diode characteristics						
Diode Forward Current ²⁾	I _S				40	A
Diode Forward voltage ³⁾	V _{SD}	V _{GS} =0V, I _S =18A			1.2	V
Reverse recover time	T _{rr}	I _F =18A, di/dt =100A/us ³⁾		42		nS
Reverse recovery charge	Q _{rr}	T _J =25°C		75		nC

Notes:

- 1) E_{AS} condition: T_J = 25°C, V_{DD} = 50V, V_G = 10V, L = 0.5mH, R_G = 25Ω.
- 2) Surface Mounted on FR4 Board, t ≤ 10 sec.
- 3) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
- 4) Guaranteed by design, not subject to production.

Typical Characteristics

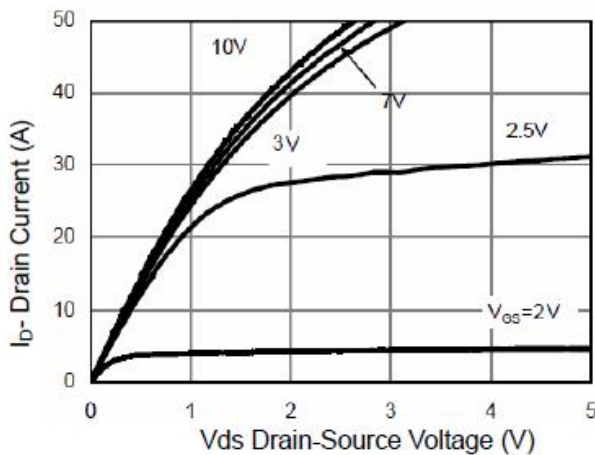


Figure 1 Output Characteristics

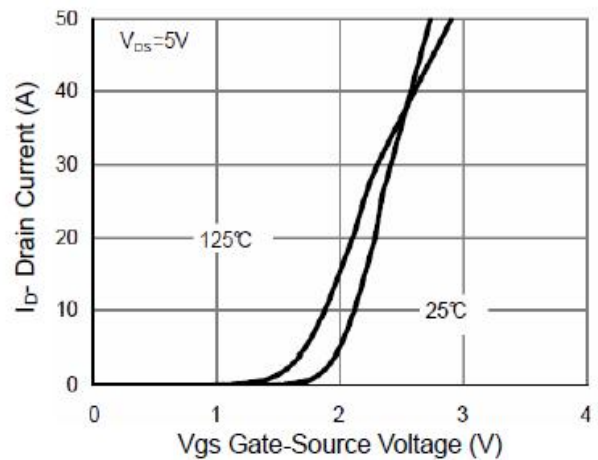


Figure 2 Transfer Characteristics

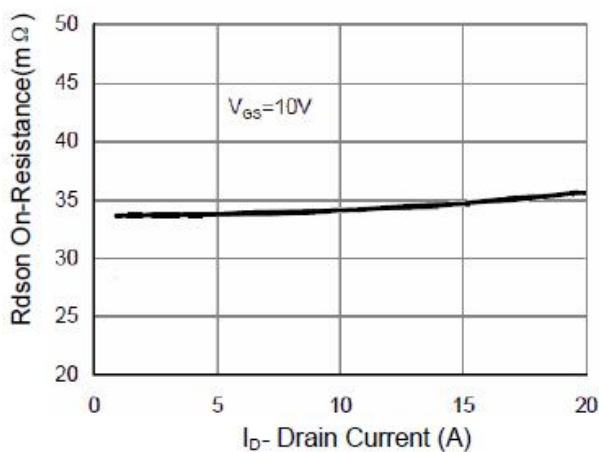


Figure 3 Rdson- Drain Current

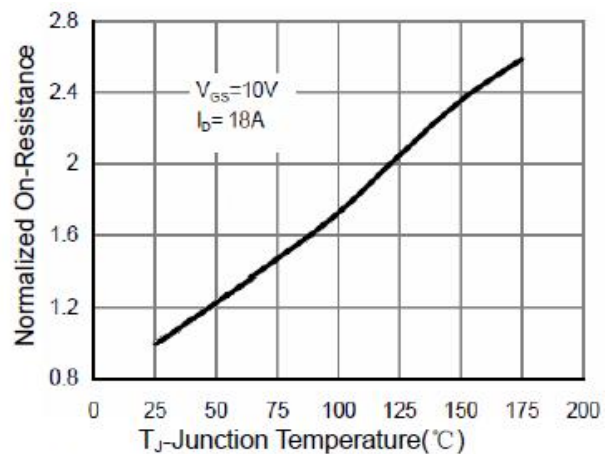


Figure 4 Rdson-Junction Temperature

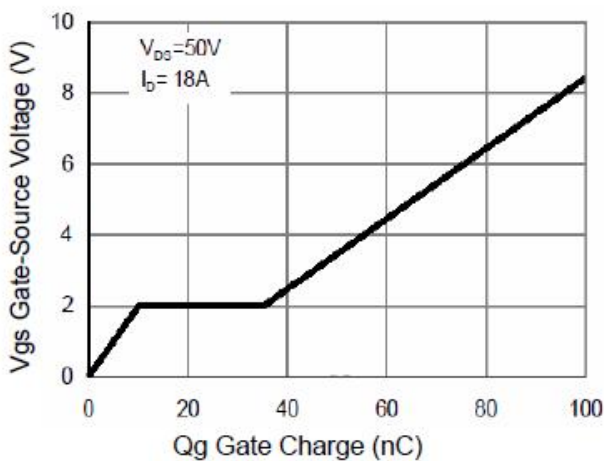


Figure 5 Gate Charge

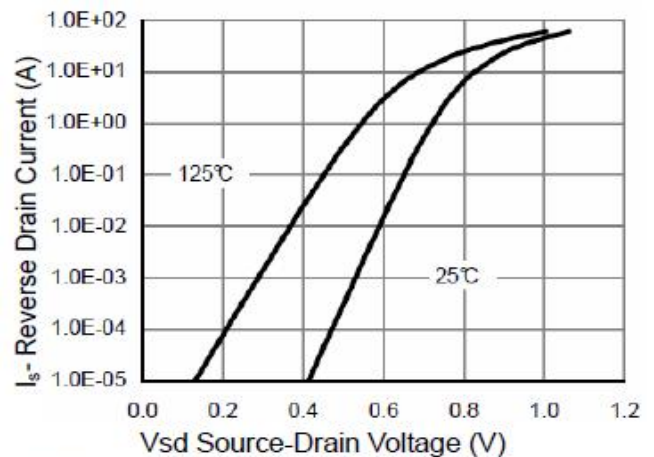


Figure 6 Source- Drain Diode Forward

Typical Characteristics

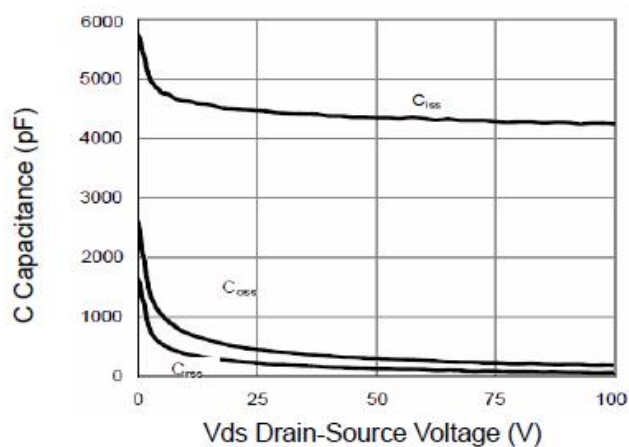


Figure 7 Capacitance vs Vds

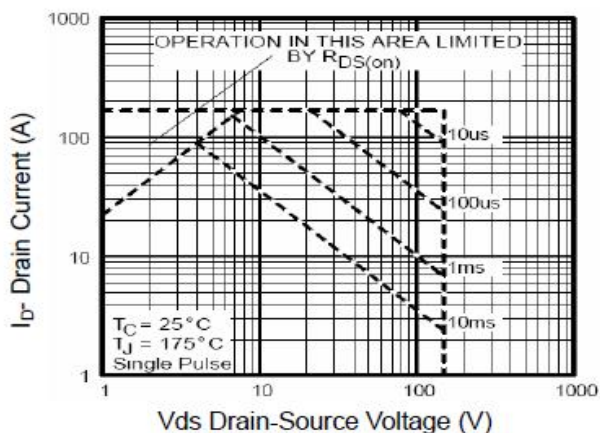


Figure 8 Safe Operation Area

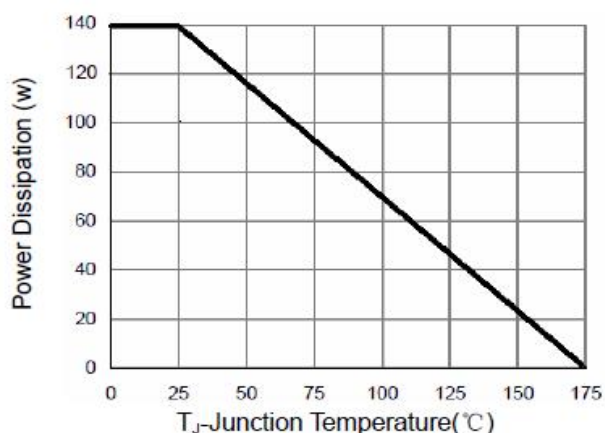


Figure 9 Power De-rating

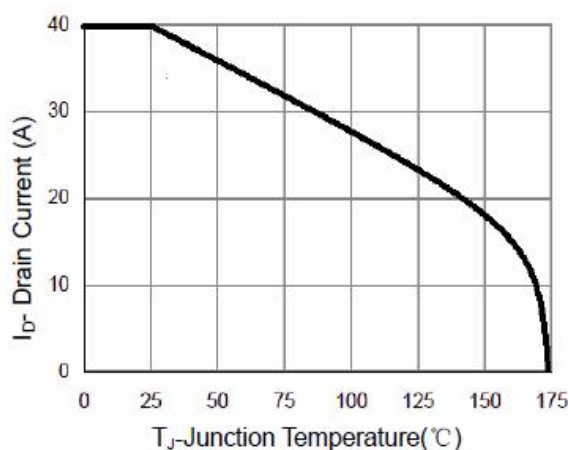


Figure 10 Current De-rating

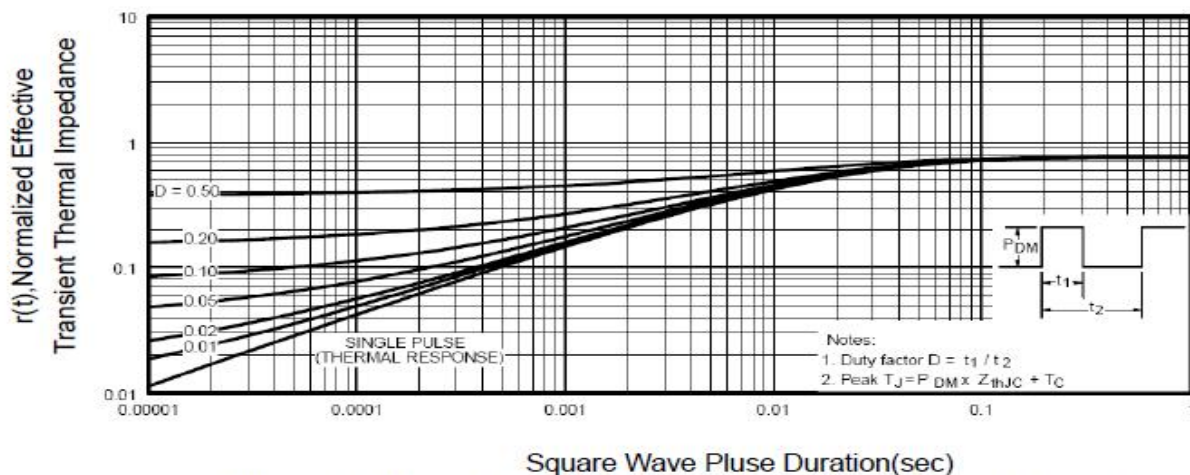
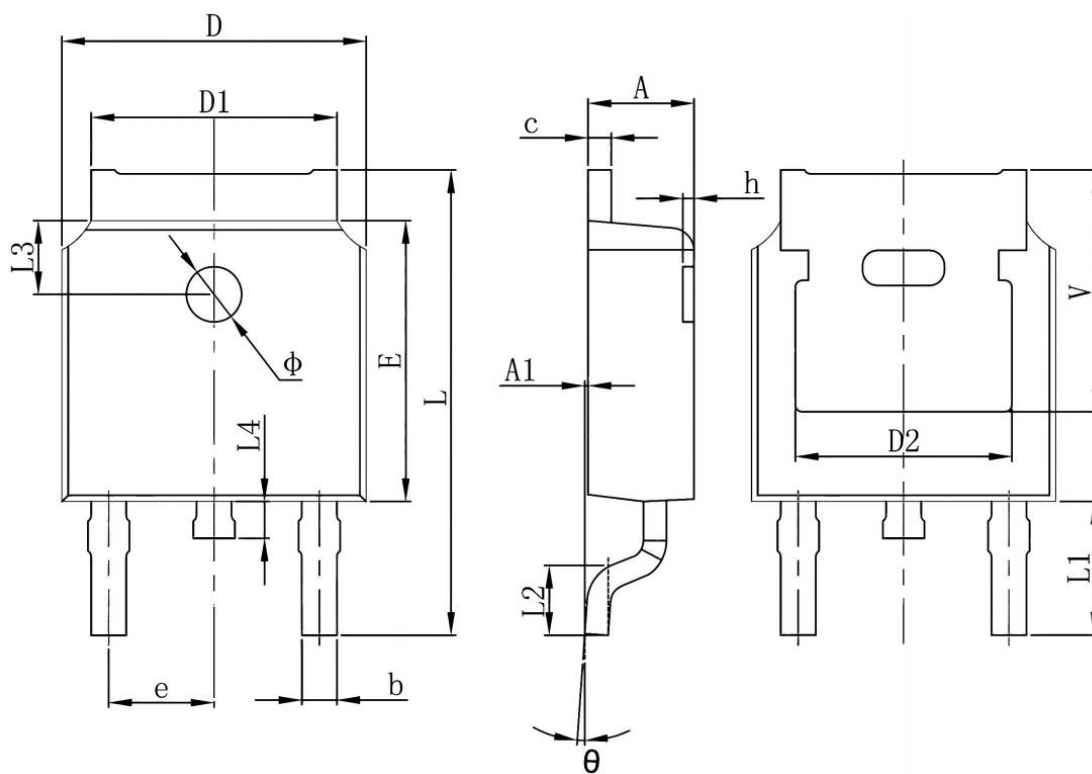


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
ϕ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	