

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	17mΩ@10V	40A

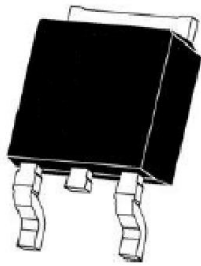
Feature

- 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

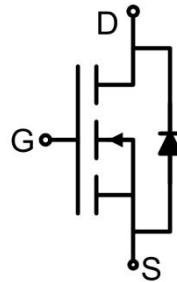
- Power switching applications
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

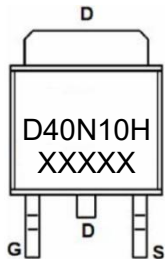


TO-252AB

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current	I _D	40	A
Drain Current-Continuous(T _c =100°C)	I _D (100°C)	28	A
Pulsed Drain Current	I _{DM}	160	A
Power Dissipation	P _D	140	W
Thermal Resistance,Junction-to-Case	R _{θJC}	1.07	°C/W
Single pulse avalanche energy	E _{AS}	520	mJ
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°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	100			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =100V, V _{GS} = 0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Drain-source on-resistance ¹⁾	R _{DS(on)}	V _{GS} =10V, I _D =28A		14.5	17	mΩ
Forward transconductance	g _{FS}	V _{DS} =25V, I _D =28A	32			S
Dynamic characteristics²⁾						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f =1MHz		3400		pF
Output Capacitance	C _{oss}			290		
Reverse Transfer Capacitance	C _{rss}			221		
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =30A		94		nC
Gate-Source Charge	Q _{gs}			16		
Gate-Drain Charge	Q _{gd}			24		
Turn-on delay time	t _{d(on)}	V _{DD} =30V, V _{GS} =10V, R _L =15Ω R _{GEN} =2.5Ω		15		nS
Turn-on rise time	t _r			11		
Turn-off delay time	t _{d(off)}			52		
Turn-off fall time	t _f			13		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				40	A
Diode Forward voltage ¹⁾	V _{DS}	V _{GS} =0V, I _S =28A			1.2	V
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F =28A di/dt = 100A/μs		33		nS
Reverse Recovery Charge	Q _{rr}			54		nC

Notes:

1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.

2) Guaranteed by design, not subject to production testing.

Typical Characteristics

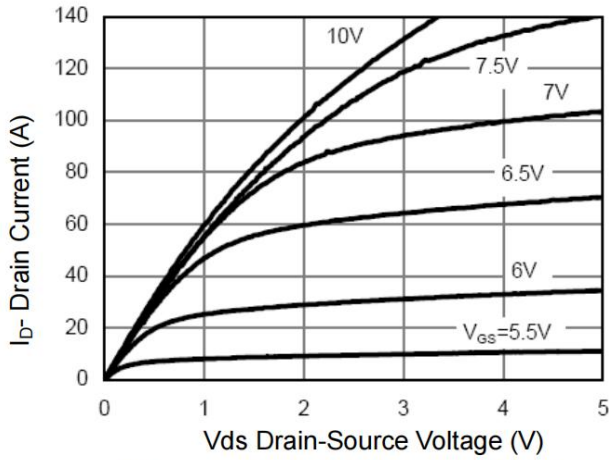


Figure 1 Output Characteristics

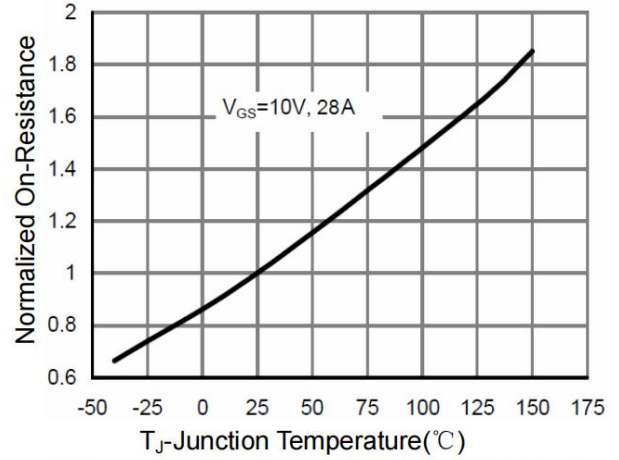


Figure 2 Rdson-Junction Temperature

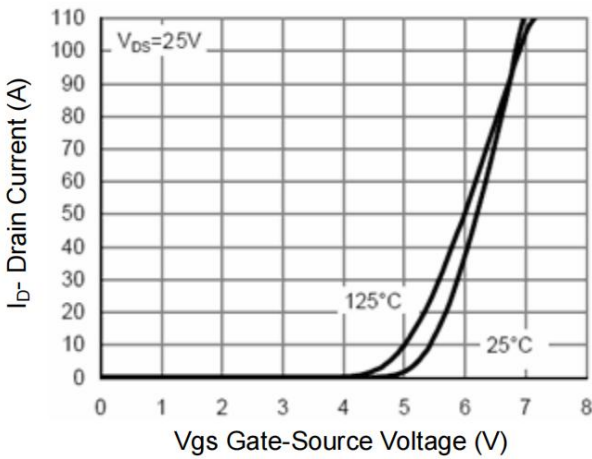


Figure 3 Transfer Characteristics

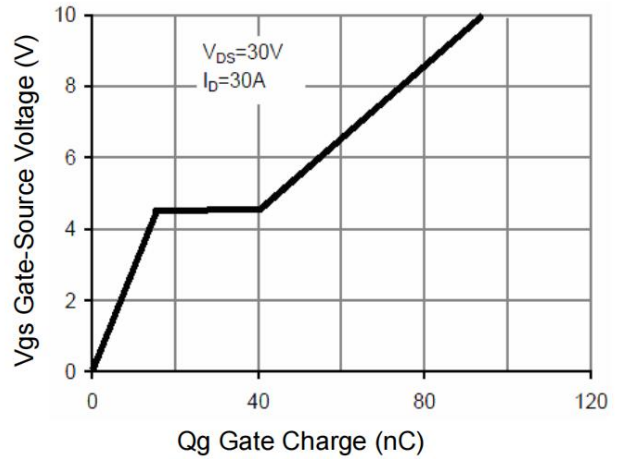


Figure 4 Gate Charge

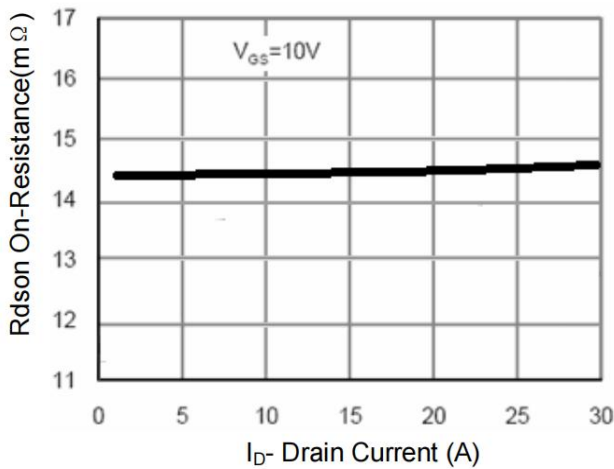


Figure 5 Rdson- Drain Current

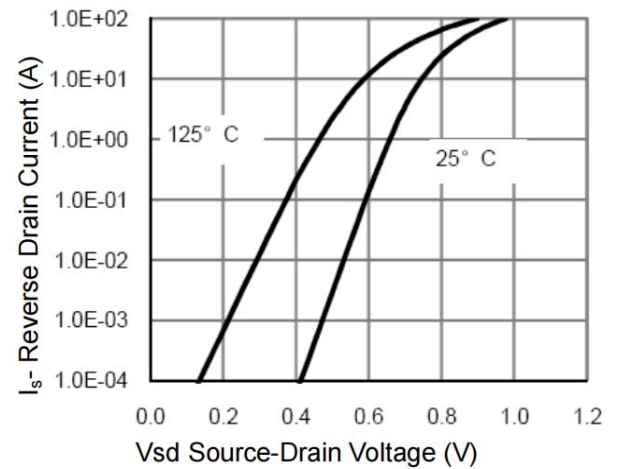


Figure 6 Source- Drain Diode Forward

Typical Characteristics

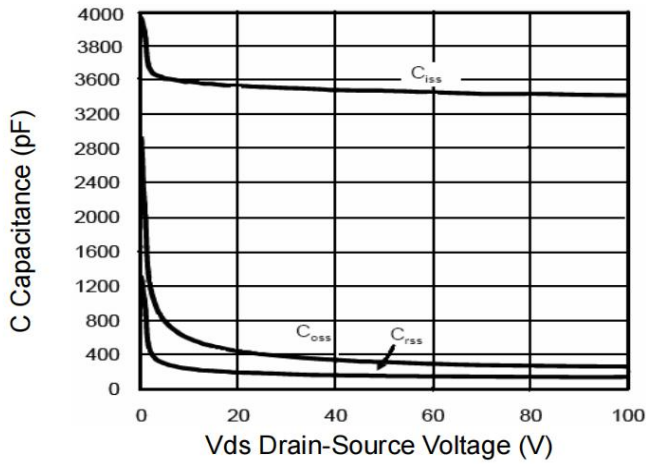


Figure 7 Capacitance vs Vds

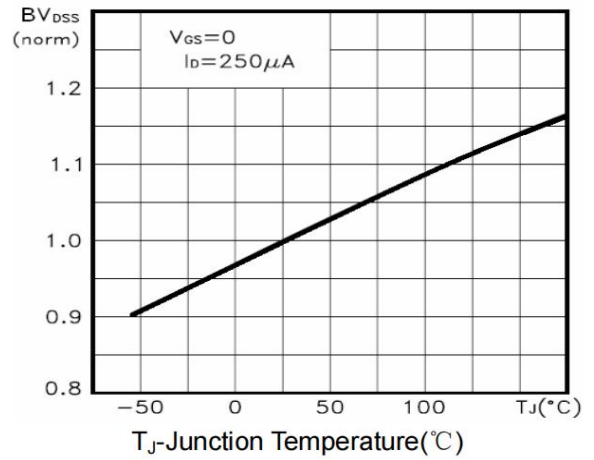


Figure 8 BV_{DSS} vs Junction Temperature

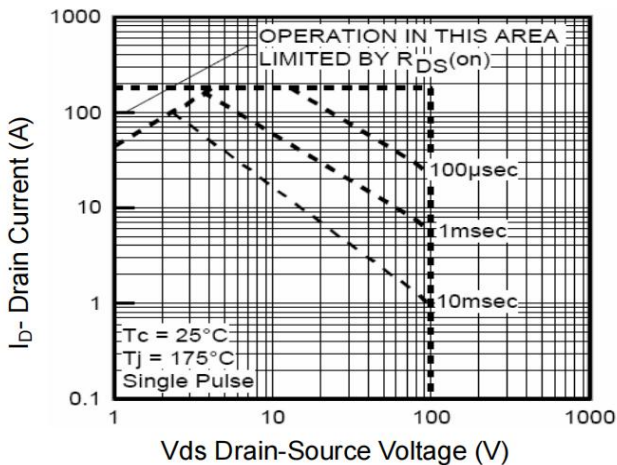


Figure 9 Safe Operation Area

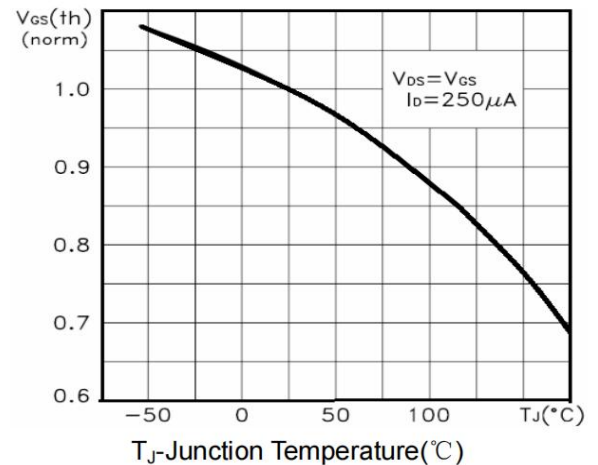


Figure 10 $V_{GS(th)}$ vs Junction Temperature

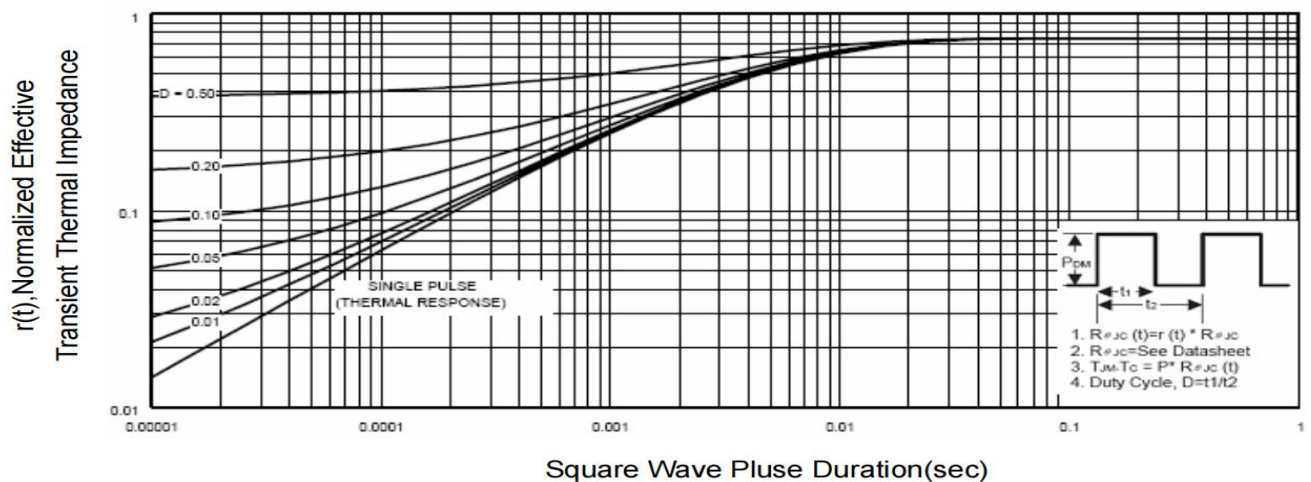
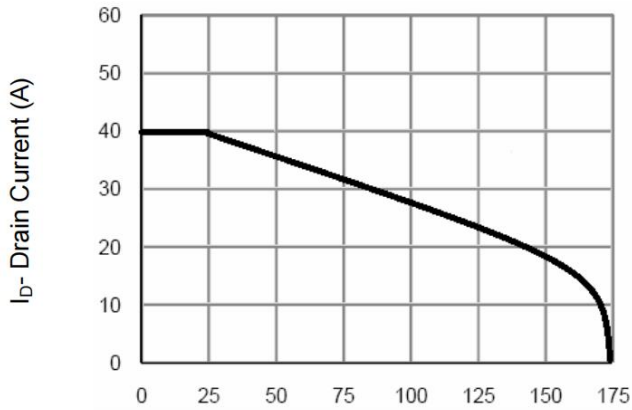


Figure 11 Normalized Maximum Transient Thermal Impedance

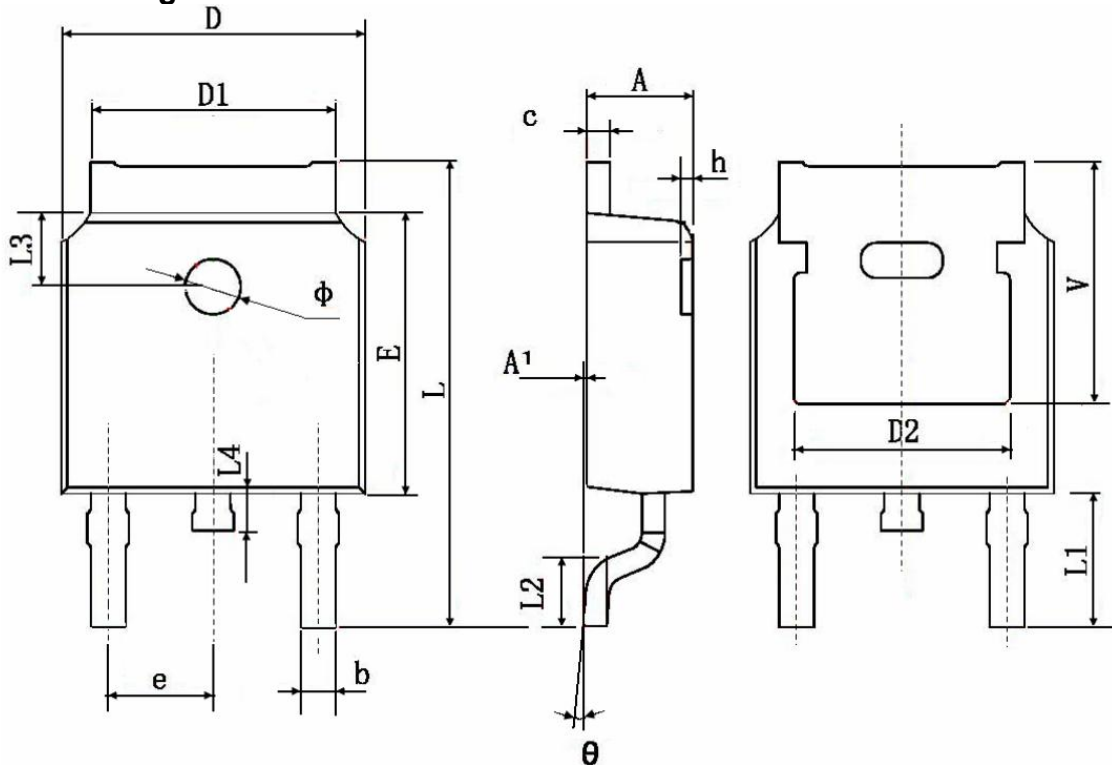
Typical Characteristics



T_J -Junction Temperature (°C)

Figure 12 Current De-rating

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	0.043
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	4.830TYP		0.190TYP	
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	2.900REF		0.114REF	
L2	1.400	1.700	0.055	0.067
L3	1.600TYP		0.063TYP	
L4	0.600	1.000	0.024	0.039
θ	0°	8°	0°	8°
ϕ	1.100	1.300	0.043	0.051
h	0.000	0.300	0.000	0.012
v	5.350TYP		0.211TYP	