

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-30V	20mΩ@-10V	-30A
	30mΩ@-4.5V	

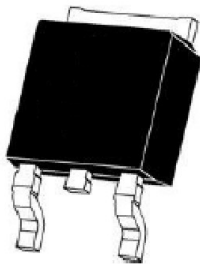
Feature

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

Application

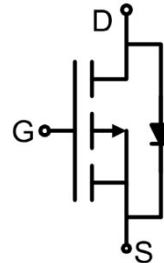
- High side switch for full bridge convert
- DC/DC converter for LCD displa

Package

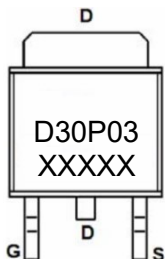


TO-252AB

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	-30	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current	I _D	-30	A
Pulsed Drain Current	I _{DM}	-120	A
Power Dissipation	P _D	34	W
Thermal Resistance, Junction-to-Case	R _{θJC}	3.67	°C/W
Single pulse avalanche energy	E _{AS}	64	mJ
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_J=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	-30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -30V, 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	-1.0		-2.5	V
Drain-source on-resistance ¹⁾	R _{DS(on)}	V _{GS} = -10V, I _D = -20A			20	mΩ
		V _{GS} = -4.5V, I _D = -20A			30	
Dynamic characteristics²⁾						
Input Capacitance	C _{iss}	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz		1572		pF
Output Capacitance	C _{oss}			176		
Reverse Transfer Capacitance	C _{rss}			147		
Total Gate Charge	Q _g	V _{DS} = -15V, V _{GS} = -10V, I _D = -5A		29.2		nC
Gate-Source Charge	Q _{gs}			5.9		
Gate-Drain Charge	Q _{gd}			4.6		
Turn-on delay time	t _{d(on)}	V _{DD} = -15V, V _{GS} = -10V, I _D = -1A, R _{GEN} = 6.0Ω		4.8		nS
Turn-on rise time	t _r			18.7		
Turn-off delay time	t _{d(off)}			53		
Turn-off fall time	t _f			33		
Source-Drain Diode characteristics						
Diode Forward Current ¹⁾	I _S				-30	A
Diode Forward voltage	V _{DS}	V _{GS} = 0V, I _S = -20A			-1.2	V
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = -10A, di/dt = 100A/μs ¹⁾		3		nS
Reverse Recovery Charge	Q _{rr}			11		nC

Notes:

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

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

Typical Characteristics

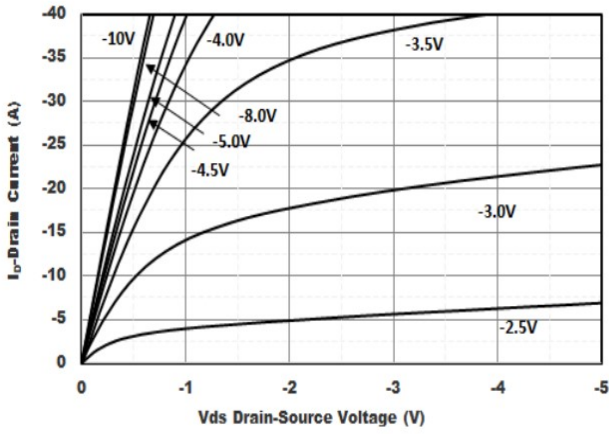


Figure1. Output Characteristics

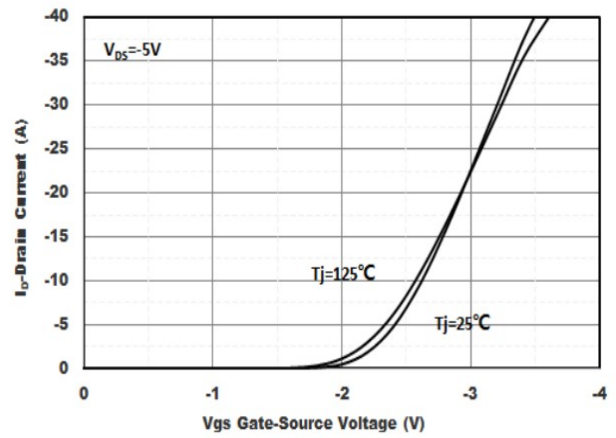


Figure2. Transfer Characteristics

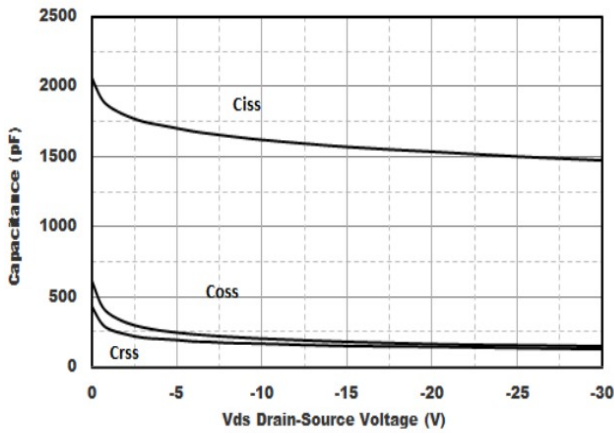


Figure3. Capacitance Characteristics

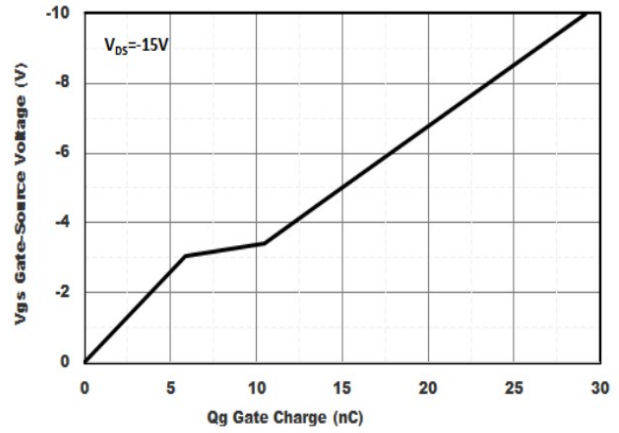


Figure4. Gate Charge

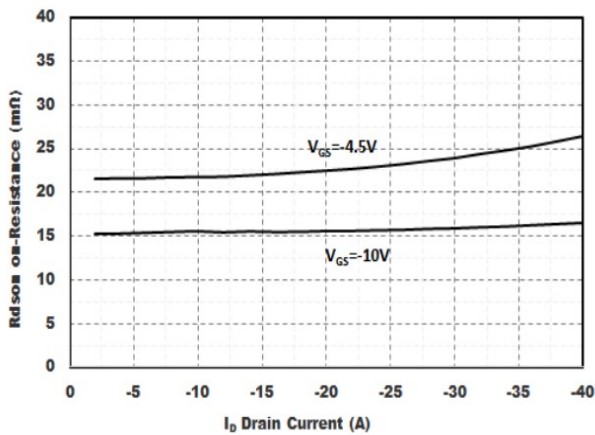


Figure5. Drain-Source on Resistance

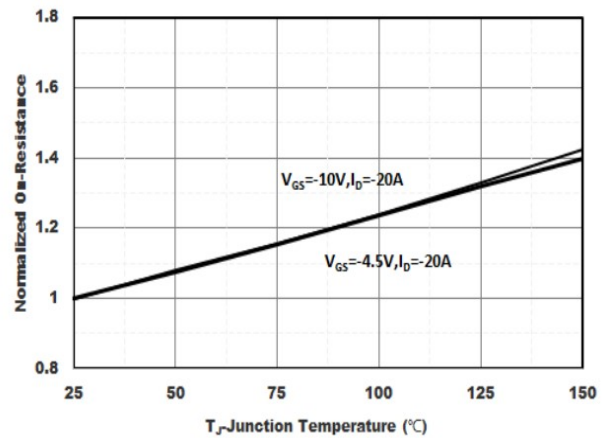


Figure6. Drain-Source on Resistance

Typical Characteristics

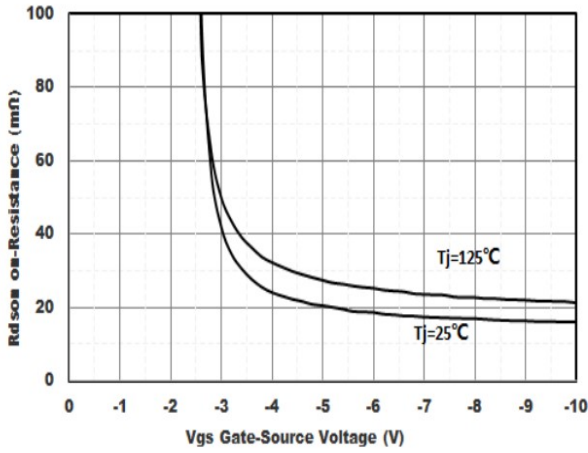


Figure 7. On-Resistance vs V_{GS}

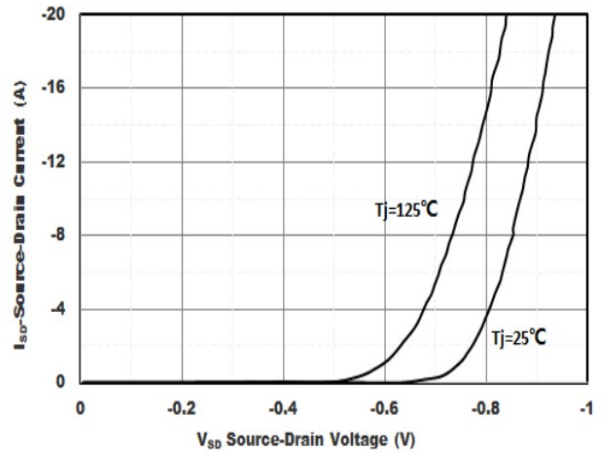


Figure 8. Drain current vs. Case Temperature

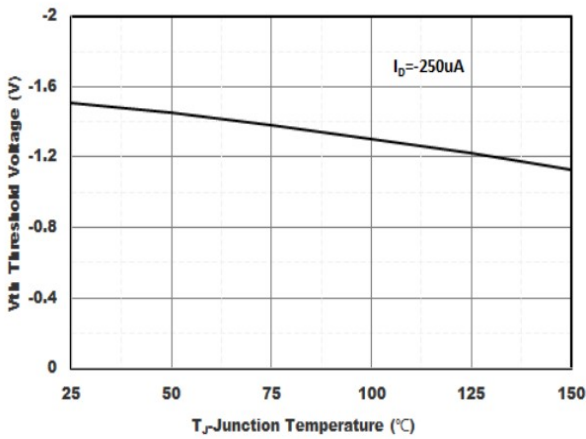


Figure 9. Threshold Voltage vs Temperature

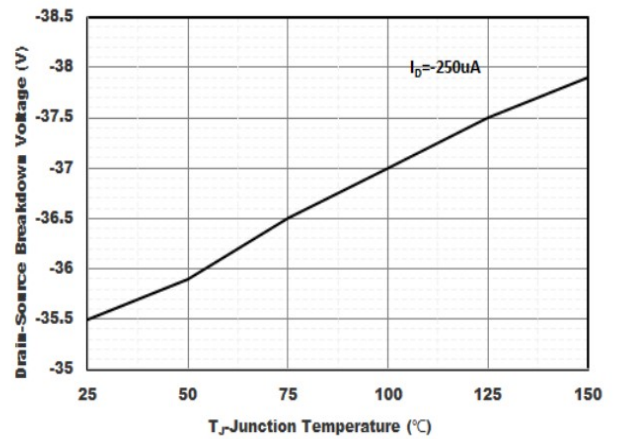


Figure 10. Breakdown Voltage vs Temperature

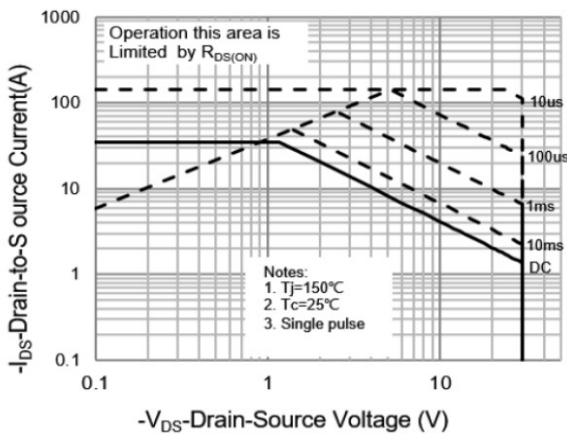


Figure 11. Safe Operation Area

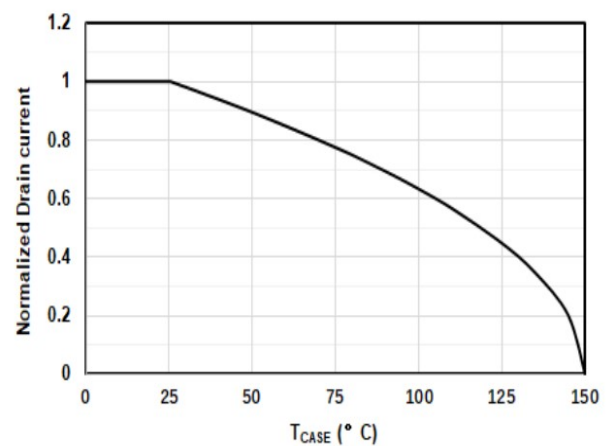


Figure 12. Drain current vs. Case Temperature

Typical Characteristics

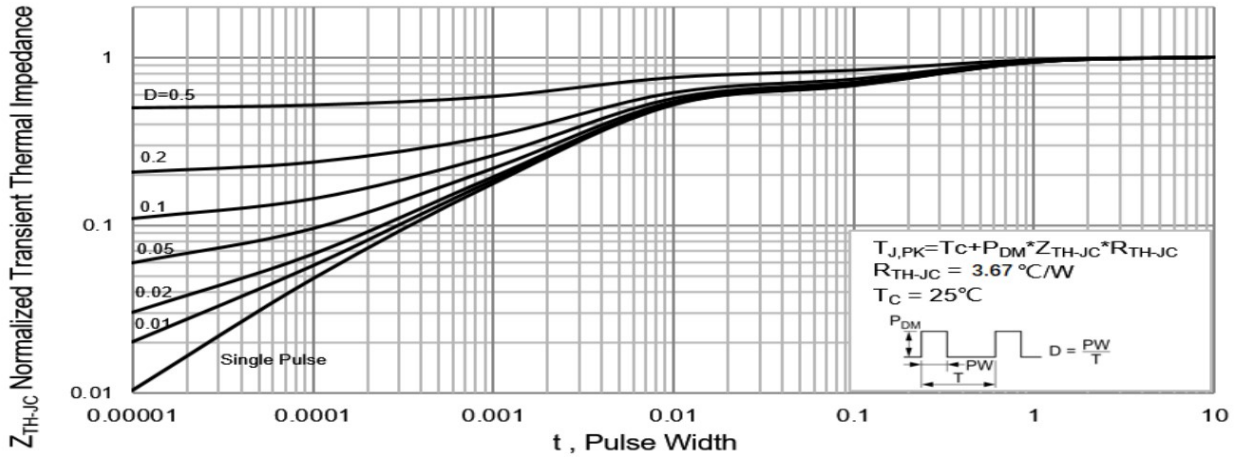
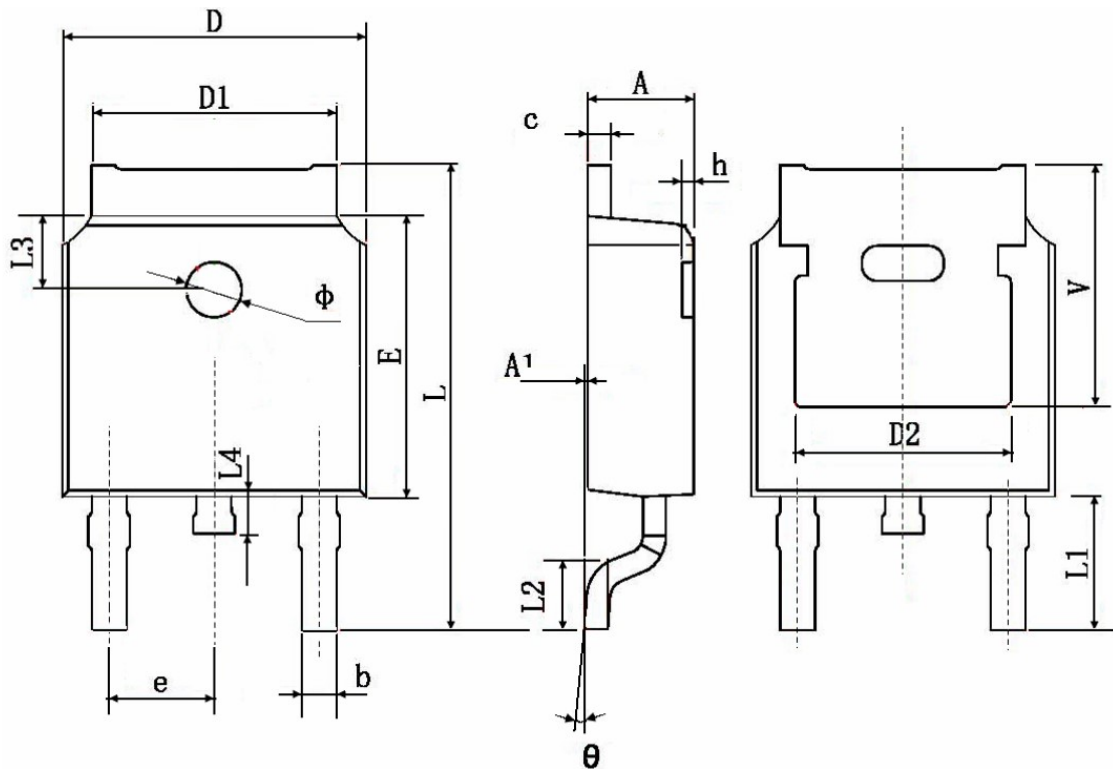


Figure13. Normalized Maximum Transient Thermal Impedance

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	0.200	0.000	0.008
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	5.150	5.450	0.203	0.215
D2	4.600	4.950	0.181	0.195
E	6.000	6.200	0.236	0.244
e	2.286BSC		0.090BSC	
L	9.700	10.400	0.382	0.409
L1	2.900REF		0.114REF	
L2	1.250	1.750	0.049	0.069
L3	1.400	1.900	0.055	0.075
L4	0.600	1.000	0.024	0.039
V	5.150	5.450	0.203	0.215
θ	0°	10°	0°	10°