

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
250V	70mΩ@10V	25A

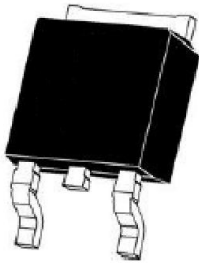
Feature

- Excellent gate charge and $R_{DS(on)}$ product(FOM)
- Very low on-resistance $R_{DS(on)}$

Application

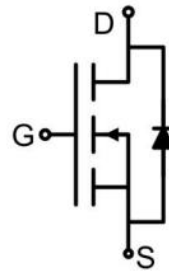
- LED backlight
- Ideal for high-frequency switching and synchronous rectification

Package

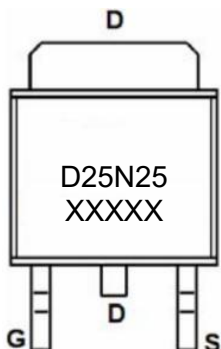


TO-252AB

Circuit diagram



Marking



Absolute maximum ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	250	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	25	A
Continuous Drain Current($T_C = 100^\circ\text{C}$)	$I_D(100^\circ\text{C})$	17.5	A
Pulsed Drain Current	I_{DM}	100	A
Power Dissipation	P_D	135	W
Deraing Factor		0.9	$\text{W}/^\circ\text{C}$
Thermal Resistance,Junction-to-Case ²⁾	$R_{\theta JC}$	1.11	$^\circ\text{C}/\text{W}$
Single pulse avalanche Energy ¹⁾	E_{AS}	320	mJ
Junction Temperature	T_J	175	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +175	$^\circ\text{C}$

Electrical characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$	250			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 250\text{V}, V_{GS} = 0\text{V}$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$			± 100	nA
Gate threshold voltage ³⁾	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	2.5	3.5	4.5	V
Drain-source on-resistance ³⁾	$R_{DS(on)}$	$V_{GS} = 10\text{V}, I_D = 20\text{A}$		60	70	m Ω
Forward transconductance ³⁾	g_{FS}	$V_{DS} = 5\text{V}, I_D = 20\text{A}$	15			S
Dynamic characteristics⁴⁾						
Input Capacitance	C_{iss}	$V_{DS} = 125\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$		1600		pF
Output Capacitance	C_{oss}			92		
Reverse Transfer Capacitance	C_{rss}			4.3		
Total Gate Charge	Q_g	$V_{DS} = 125\text{V}, V_{GS} = 10\text{V}, I_D = 20\text{A}$		24		nC
Gate-Source Charge	Q_{gs}			9.5		
Gate-Drain Charge	Q_{gd}			5.6		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 125\text{V}, V_{GS} = 10\text{V}, R_L = 7.5\Omega, R_G = 3\Omega$		7		nS
Turn-on rise time	t_r			9		
Turn-off delay time	$t_{d(off)}$			25		
Turn-off fall time	t_f			5		
Source-Drain Diode characteristics						
Diode Forward voltage ³⁾	V_{SD}	$V_{GS} = 0\text{V}, I_S = 20\text{A}$			1.2	V
Diode Forward Current ²⁾	I_S				25	A
Reverse Recovery Time	t_{rr}	$T_j = 25^\circ\text{C}, I_F = I_S, di/dt = 100\text{A}/\mu\text{s}^3$		45		nS
Reverse Recovery Charge	Q_{rr}			160		nC

Notes:

- 1) EAS condition : $T_j = 25^\circ\text{C}, V_{DD} = 50\text{V}, V_G = 10\text{V}, L = 0.5\text{mH}, R_G = 25\Omega$.
- 2) Surface Mounted on FR4 Board, $t \leq 10$ sec.
- 3) Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.
- 4) Guaranteed by design, not subject to production.

Typical Characteristics

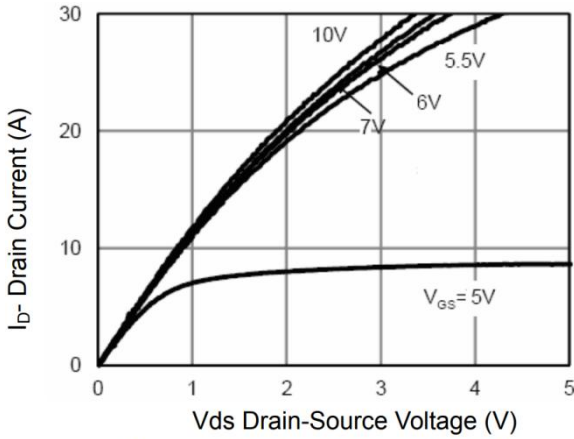


Figure 1 Output Characteristics

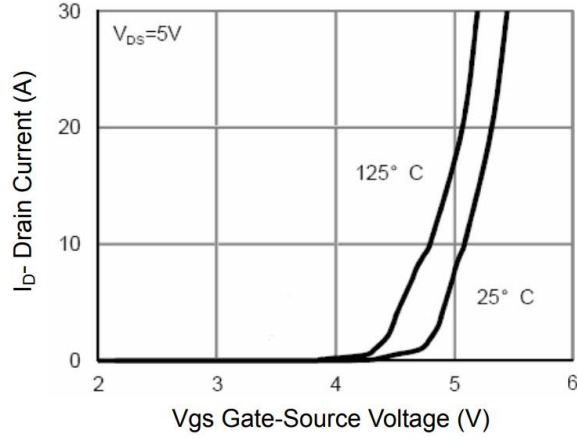


Figure 2 Transfer Characteristics

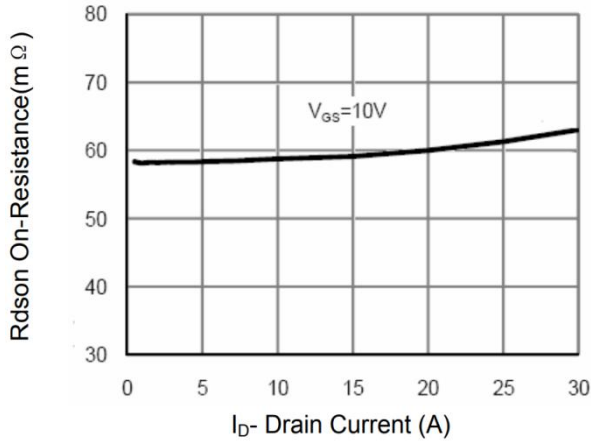


Figure 3 Rdson- Drain Current

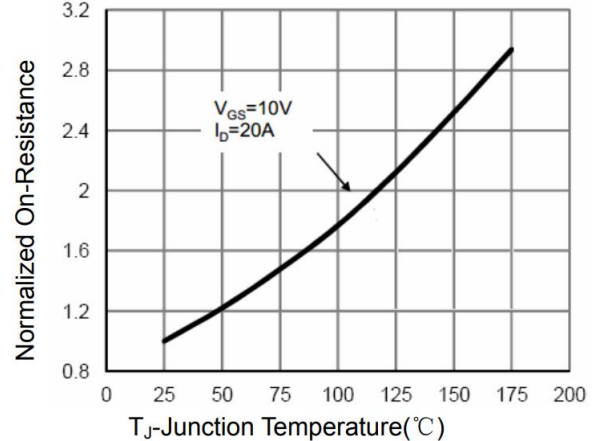


Figure 4 Rdson-Junction Temperature

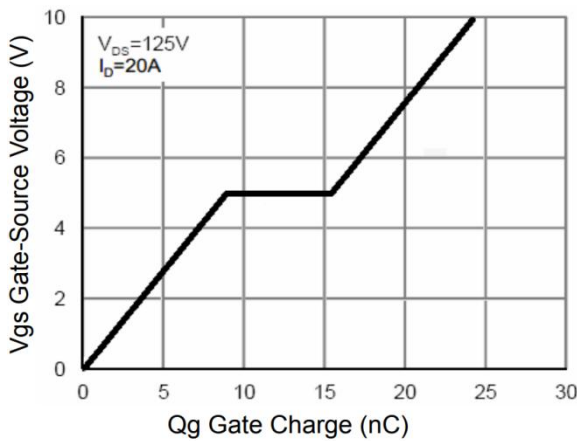


Figure 5 Gate Charge

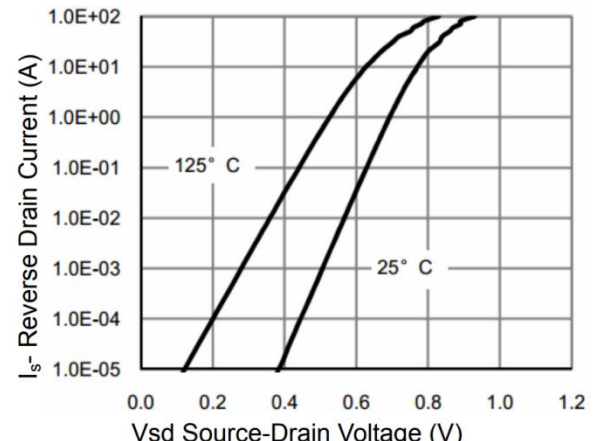


Figure 6 Source- Drain Diode Forward

Typical Characteristics

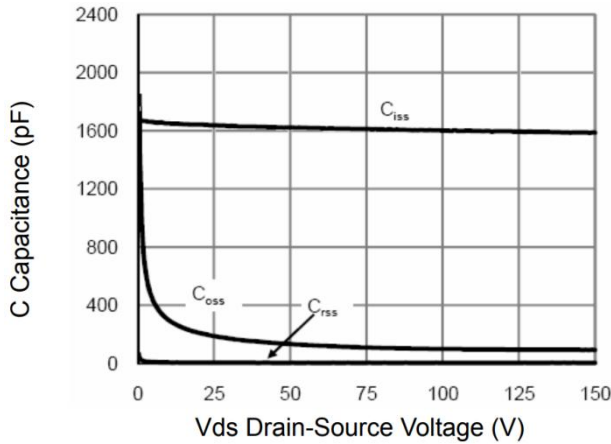


Figure 7 Capacitance vs Vds

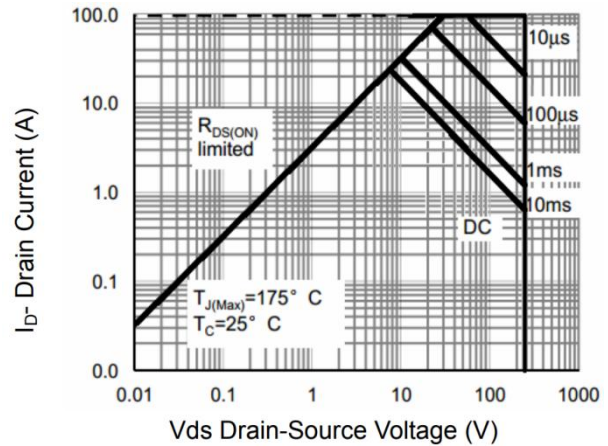


Figure 8 Safe Operation Area

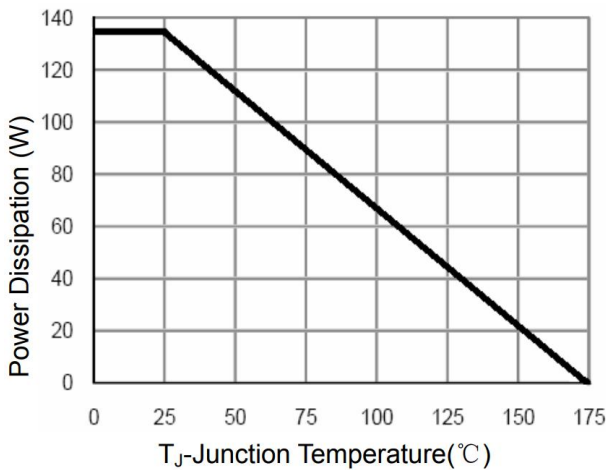


Figure 9 Power De-rating

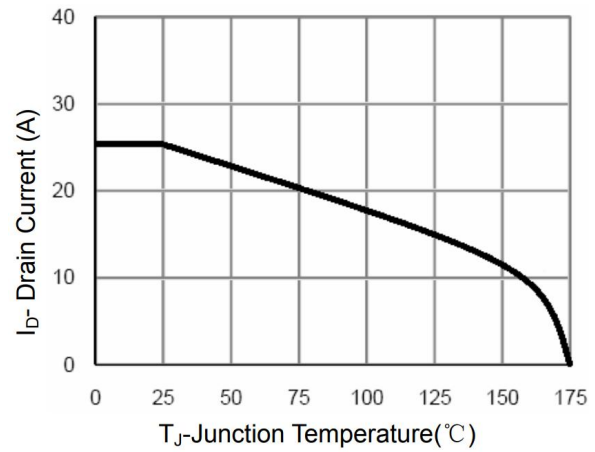


Figure 10 Current De-rating

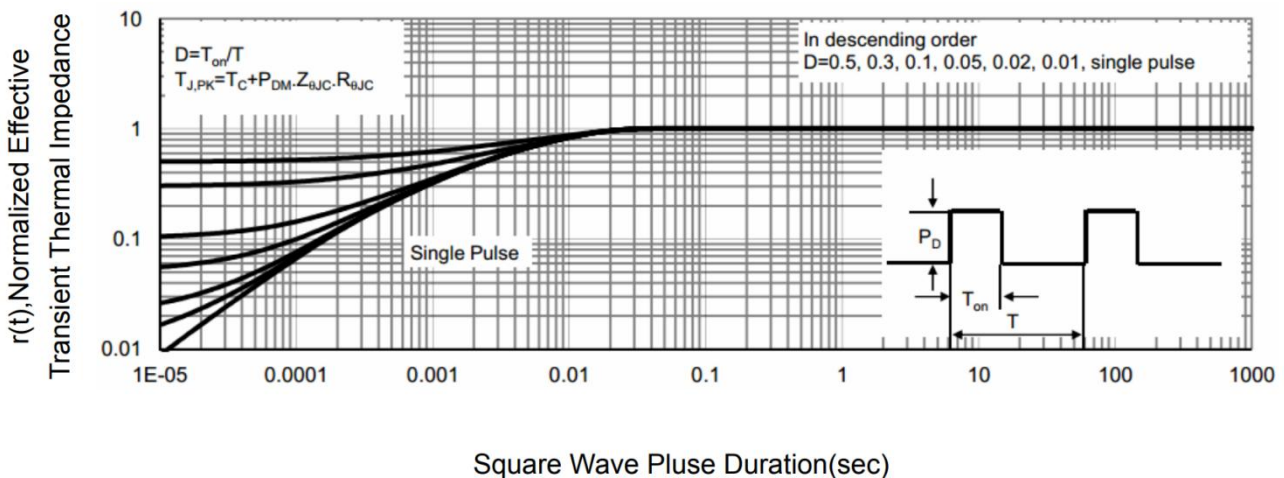
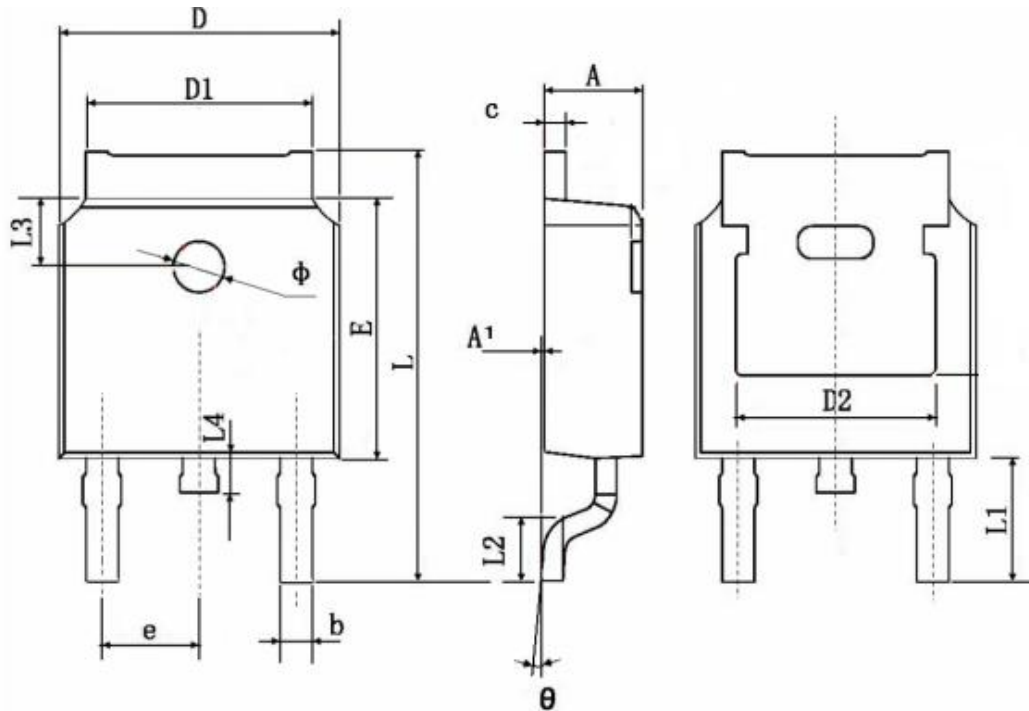


Figure 11 Normalized Maximum Transient Thermal Impedance

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	0.130	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	5.500	0.201	0.217
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.390	0.086	0.094
L	9.800	10.500	0.386	0.413
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.800	0.055	0.070
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°