

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D@25^{\circ}C$
1200V	196m Ω @20V	18A

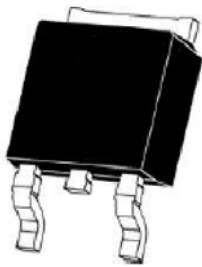
Feature

- High Blocking Voltage With Low On-Resistance
- High Speed Switching With Low Capacitance
- Easy to Parallel and Simple to Drive

Application

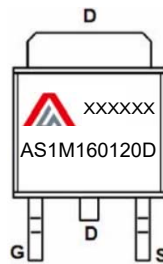
- Power Supplies
- High Voltage DC/DC Converters
- Motor Drivers
- Switch Mode Power Supplies
- Pulsed Power Applications

Package

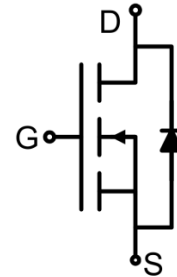


TO-252-2

Marking



Circuit diagram



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

Parameter	Symbol	Test Condition	Value	Unit
Drain-Source Voltage	V_{DSmax}	$V_{GS} = 0V, I_{DS} = 100\mu A$	1200	V
Gate-Source Voltage	V_{GSmax}	Absolute maximum values	-10/+25	V
Gate-Source Voltage	V_{GSOP}	Recommended operational values	-5/+20	V
Continuous Drain Current	I_D	$V_{GS} = 20V, T_C=25^{\circ}C$	18	A
	I_D	$V_{GS} = 20V, T_C=100^{\circ}C$	12	A
Pulsed Drain Current	I_{DM}	Pulse width t_p limited by T_{jmax}	30	A
Power Dissipation	P_D	$T_C=25^{\circ}C, T_J=150^{\circ}C$	100	W
Thermal Resistance	$R_{\theta JC}$	Junction-to-Case	1.2	$^{\circ}C/W$
Thermal Resistance	$R_{\theta JA}$	Junction-to-Ambient	40	$^{\circ}C/W$
Junction Temperature	T_J		-55 ~ +150	$^{\circ}C$
Storage Temperature	T_{STG}		-55 ~ +150	$^{\circ}C$

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 _{DS} = 100μA	1200			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 1200V, V _{GS} = 0V			100	μA
Gate-Source leakage current	I _{GSS+}	V _{GS} = 25V, V _{DS} = 0V			250	nA
Gate-Source leakage current	I _{GSS-}	V _{GS} = -10V, V _{DS} = 0V			250	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _{DS} = 2.5mA	2.0		4.0	V
		V _{DS} = V _{GS} , I _{DS} = 2.5mA, T _J = 150°C		1.8		
Drain-source on-resistance	R _{DS(on)}	V _{GS} = 20V, I _D = 10A		160	196	mΩ
		V _{GS} = 20V, I _D = 10A, T _J = 150°C		280		
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} = 1000V, V _{GS} = 0V, f = 1MHz V _{AC} = 25mV		890		pF
Output Capacitance	C _{oss}			54		
Reverse Transfer Capacitance	C _{riss}			8.5		
C _{oss} Stored Energy	E _{oss}			31		μJ
Turn-on Switching Energy	E _{on}	V _{DS} = 800V, V _{GS} = -5V/20V, I _D = 10A, R _{G(ext)} = 2.5Ω, L = 200μH		330		
Turn-off Switching Energy	E _{off}			60		
Total Gate Charge	Q _g	V _{DS} = 800V, V _{GS} = -5V/20V, I _D = 10A		46		nC
Gate-Source Charge	Q _{gs}			18		
Gate-Drain Charge	Q _{gd}			11		
Turn-on delay time	t _{d(on)}	V _{DS} = 800V, V _{GS} = -5V/20V, I _D = 10A, R _{G(ext)} = 2.5Ω, R _L = 80Ω		8		nS
Turn-on rise time	t _r			9		
Turn-off delay time	t _{d(off)}			14		
Turn-off fall time	t _f			10		
Internal Gate Resistance	R _G	f = 1MHz V _{AC} = 25mV		5.4		Ω
Source-Drain Diode characteristics						
Diode Forward Current	I _S	T _C = 25°C			18	A
Diode Forward voltage	V _{DS}	V _{GS} = -5V, I _{SD} = 5A		4.2		V
		V _{GS} = -5V, I _{SD} = 5A, T _J = 150°C		3.9		
Reverse Recovery Time	t _{rr}	I _{SD} = 10A, V _R = 800V		28		nS
Reverse Recovery Charge	Q _{rr}			50		nC
Peak Reverse Recovery Current	I _{rrm}			3		A

Typical Characteristics

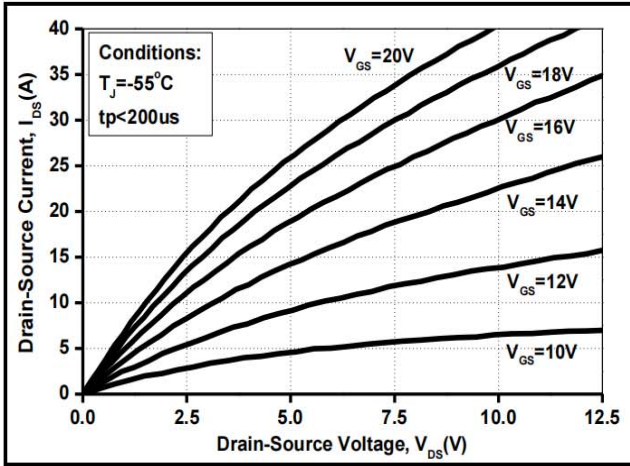


Figure 1. Output Characteristics $T_J = -55^\circ\text{C}$

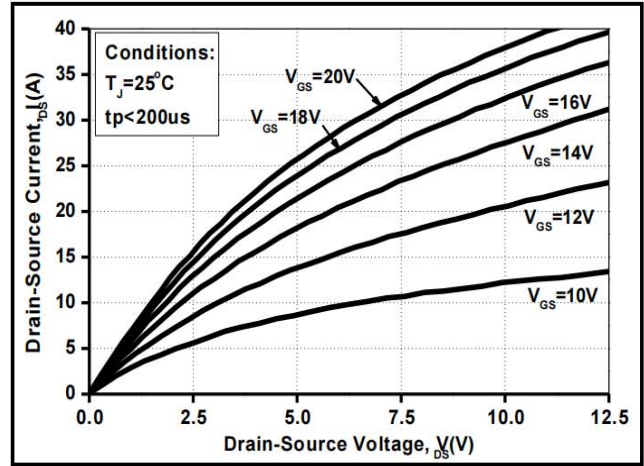


Figure 2. Output Characteristics $T_J = 25^\circ\text{C}$

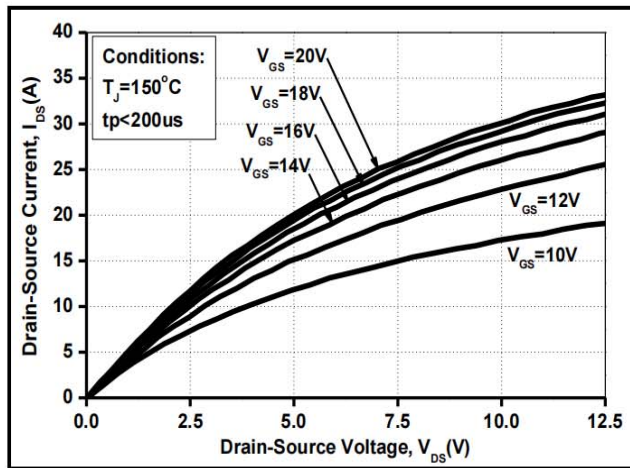


Figure 3. Output Characteristics $T_J = 150^\circ\text{C}$

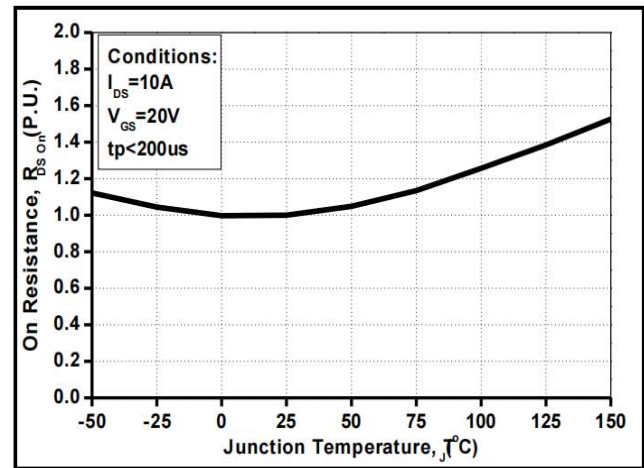


Figure 4. Normalized On-Resistance vs. Temperature

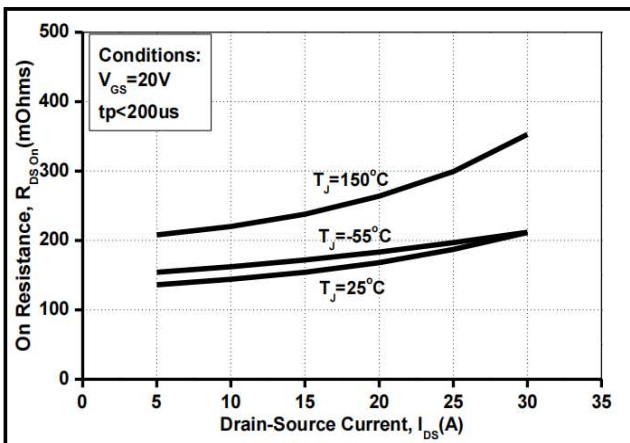


Figure 5. On-Resistance vs. Drain Current
For Various Temperatures

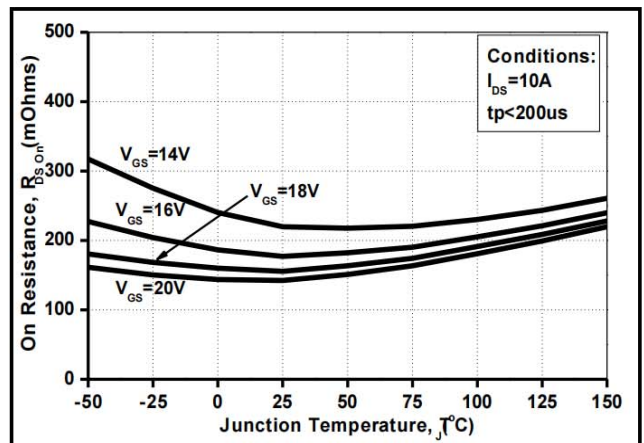


Figure 6. On-Resistance vs. Temperature
For Various Gate Voltage

Typical Characteristics

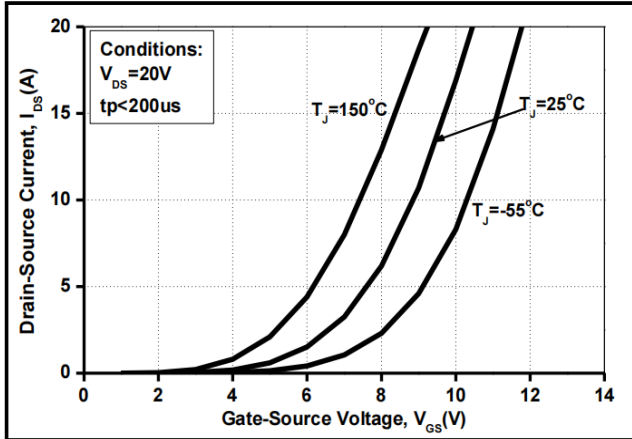


Figure 7. Transfer Characteristic for Various Junction Temperatures

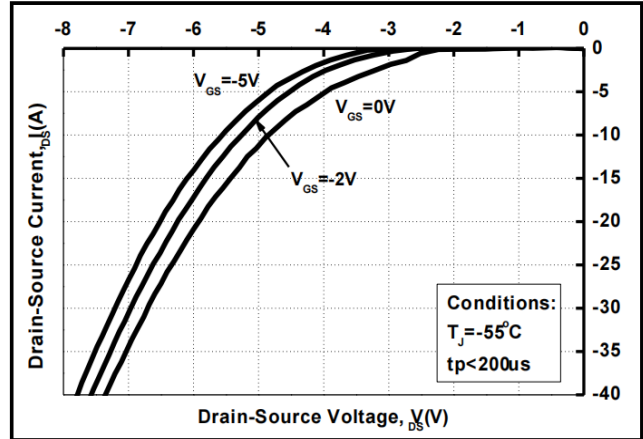


Figure 8. Body Diode Characteristic at -55 °C

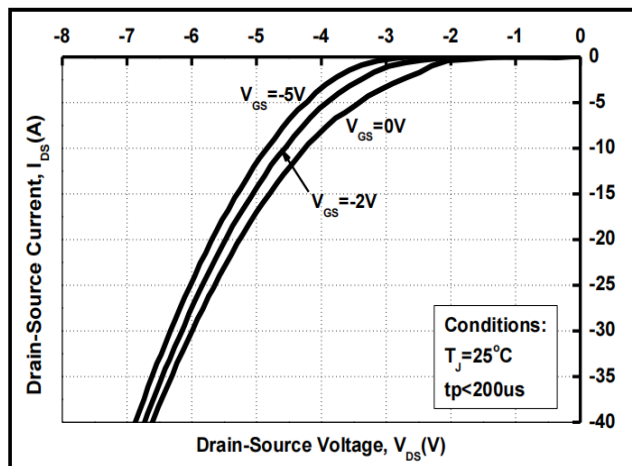


Figure 9. Body Diode Characteristic at 25 °C

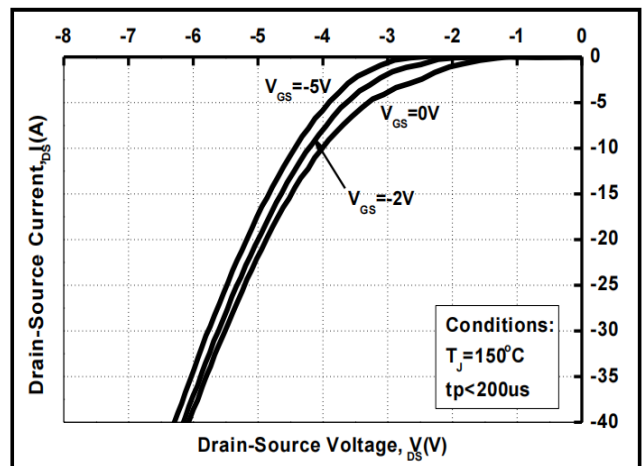


Figure 10. Body Diode Characteristic at 150 °C

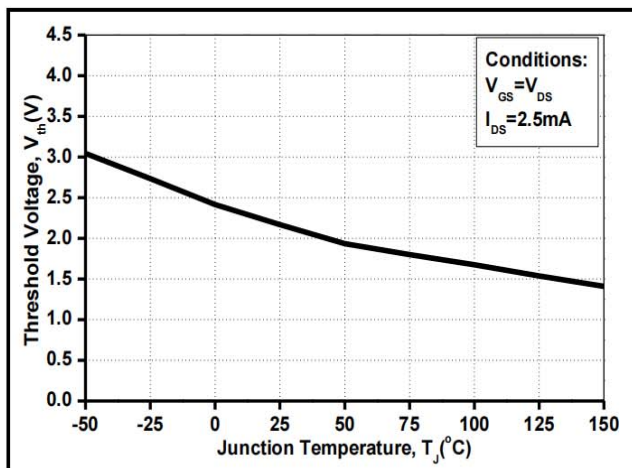


Figure 11. Threshold Voltage vs. Temperature

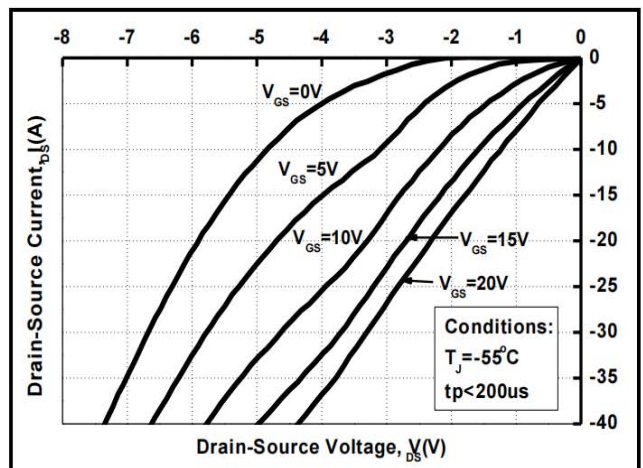


Figure 12. 3rd Quadrant Characteristic at -55 °C

Typical Characteristics

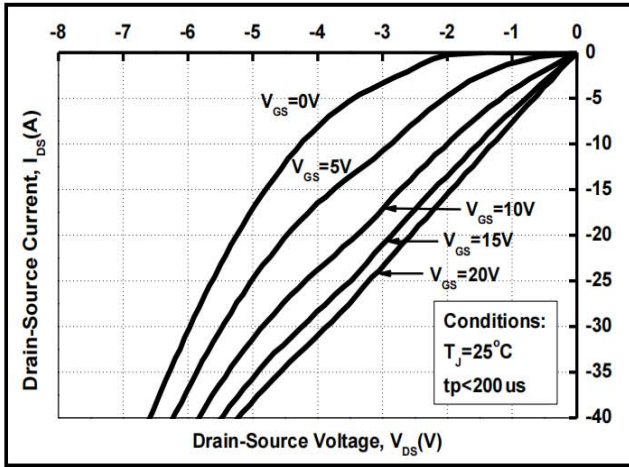


Figure 13. 3rd Quadrant Characteristic at 25 °C

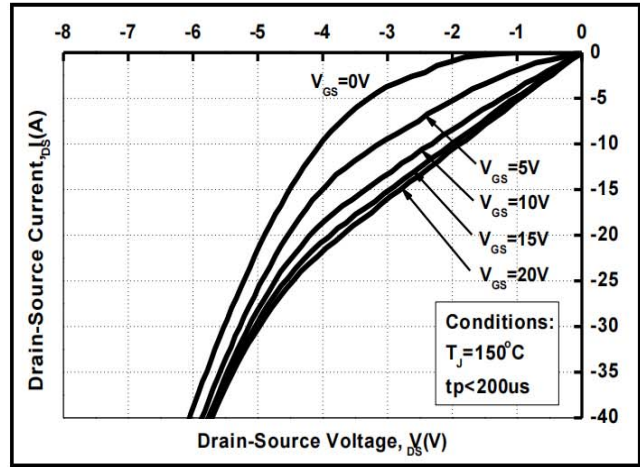


Figure 14. 3rd Quadrant Characteristic at 150 °C

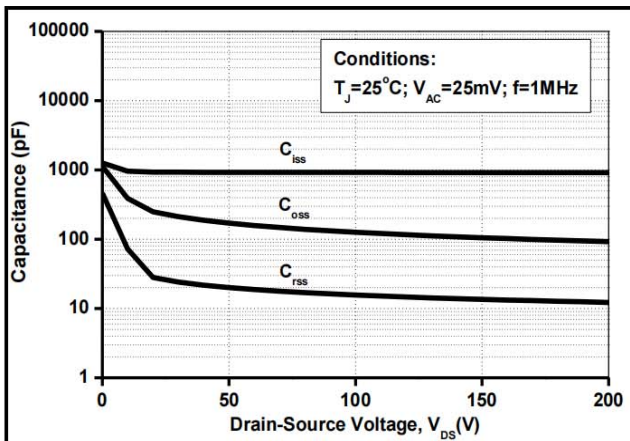


Figure 15. Capacitances vs. Drain-Source Voltage (0 - 200V)

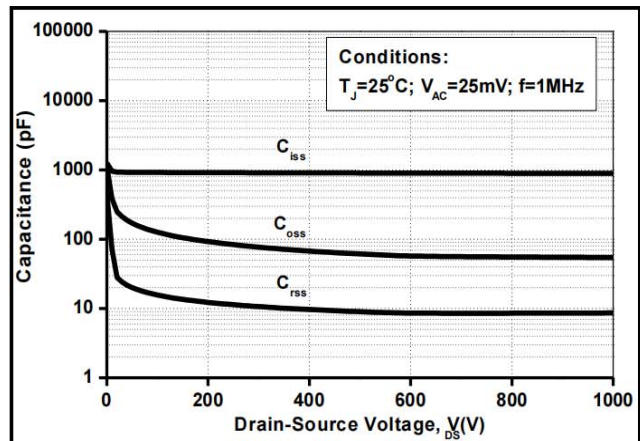
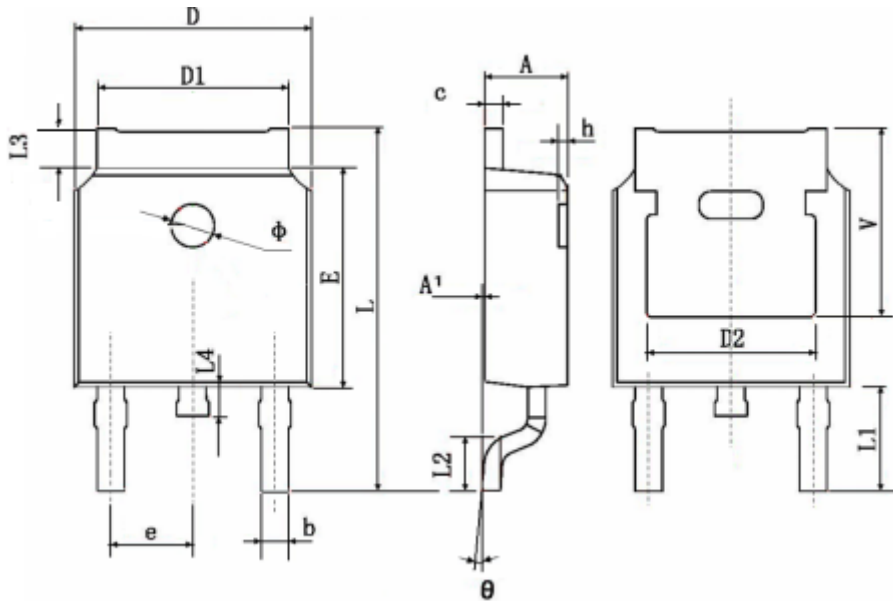


Figure 16. Capacitances vs. Drain-Source Voltage (0 - 1000V)

TO-252-2 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	0.640	0.880	0.025	0.035
c	0.460	0.580	0.018	0.023
D	6.400	6.700	0.252	0.264
D1	5.150	5.460	0.203	0.215
D2	4.400	4.950	0.173	0.195
E	6.000	6.250	0.236	0.246
e	2.286 BSC		0.090 BSC	
L	9.400	10.500	0.370	0.413
L1	2.750 REF		0.108	
L2	1.250	1.780	0.049	0.070
L3	0.850	1.300	0.033	0.051
L4	0.600	1.000	0.024	0.039
θ	0°	10°	0°	10°