

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D@25^{\circ}C$
650V	50mΩ@18V	55A

Feature

- High Blocking Voltage With Low On-Resistance
- High Speed Switching With Low Capacitance
- Fast Intrinsic Diode with Low Reverse Recovery (Qrr)

Application

- EV Charging
- Server Power Supplies
- Solar PV Inverters
- UPS
- DC/DC Converters

Package

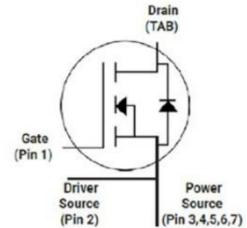


TO-263-7

Marking



Circuit diagram



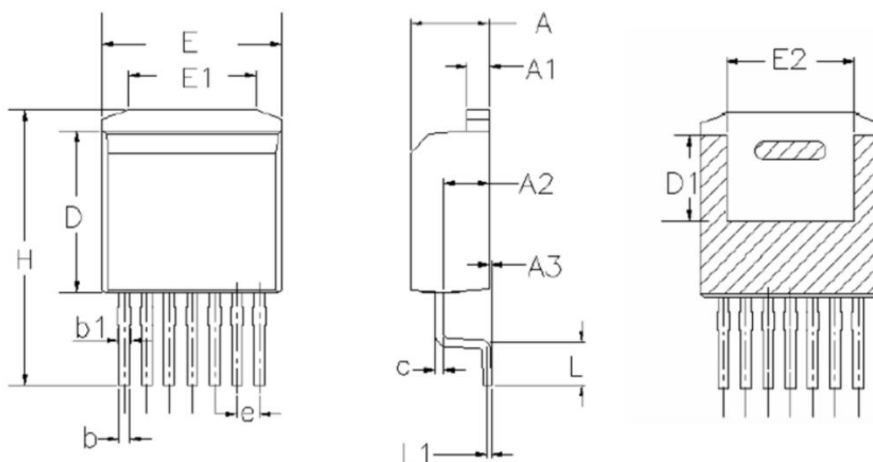
Absolute maximum ratings ($T_c=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Test Condition	Value	Unit
Drain-Source Voltage	V_{DSmax}	$V_{GS} = 0V, I_D = 100\mu A$	650	V
Gate-Source Voltage	V_{GSmax}	Absolute maximum values	-8/+22	V
Gate-Source Voltage	V_{GSOP}	Recommended operational values	-4/+18	V
Continuous Drain Current	I_D	$V_{GS}=18V, T_c=25^{\circ}C$	55	A
	I_D	$V_{GS}=18V, T_c=100^{\circ}C$	39	A
Power Dissipation	P_D	$T_c=25^{\circ}C$	187	W
Thermal Resistance (Typ)	$R_{\theta JC}$	Junction-to-Case	0.8	$^{\circ}C/W$
Junction Temperature	T_J		-55 ~ +175	$^{\circ}C$
Storage Temperature	T_{STG}		-55 ~ +175	$^{\circ}C$

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 _D = 1mA	650			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 650V, V _{GS} = 0V		1	50	μA
Gate-Source leakage current	I _{GSS}	V _{GS} = 22V, V _{DS} = 0V		10	250	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 10mA	1.8	2.6	4.3	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} = 18V, I _D = 25A		30	50	mΩ
		V _{GS} = 18V, I _D = 25A, T _J = 175°C		42		
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} = 400V, V _{GS} = 0V, f = 1MHz V _{AC} = 25mV		1850		pF
Output Capacitance	C _{oss}			160		
Reverse Transfer Capacitance	C _{rss}			15		
Turn-on Switching Energy	E _{on}	V _{DS} = 400V, V _{GS} = -4V/18V, I _D = 25A, R _{G(ext)} = 2.5Ω, L = 100μH		50		μJ
Turn-off Switching Energy	E _{off}			65		
Total Gate Charge	Q _g	V _{DS} = 400V, V _{GS} = -4V/18V, I _D = 25A		110		nC
Gate-Source Charge	Q _{gs}			30		
Gate-Drain Charge	Q _{gd}			32		
Turn-on delay time	t _{d(on)}	V _{DS} = 400V, V _{GS} = -4V/18V, I _D = 25A, R _{G(ext)} = 2.5Ω, R _L = 16Ω		14		nS
Turn-on rise time	t _r			15		
Turn-off delay time	t _{d(off)}			28		
Turn-off fall time	t _f			8		
Source-Drain Diode characteristics						
Diode Forward Current	I _S	V _{GS} = -4V, T _C = 25°C			45	A
Diode Forward voltage	V _{SD}	V _{GS} = -4V, I _{SD} = 12.5A		4.2		V
		V _{GS} = -4V, I _{SD} = 12.5A, T _J = 175°C		3.8		
Reverse Recovery Time	t _{rr}	I _{SD} = 25A, V _R = 400V		25		nS
Reverse Recovery Charge	Q _{rr}			100		nC
Peak Reverse Recovery Current	I _{rrm}			5		A

TO-263-7 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.300	4.600	0.169	0.181
A1	1.200	1.400	0.047	0.055
A2	2.400	2.700	0.094	0.106
A3	0.000	0.250	0.000	0.010
b	0.500	0.700	0.020	0.028
b1	0.600	0.900	0.024	0.035
c	0.400	0.600	0.016	0.024
D	8.880	9.280	0.350	0.365
D1	4.650	6.650	0.183	0.262
e	1.270 BSC		0.050 BSC	
E	10.080	10.280	0.397	0.405
E1	6.500	8.300	0.256	0.327
E2	6.820	7.97	0.269	0.314
H	14.800	16.000	0.583	0.630
L	1.900	2.750	0.075	0.108