

Features

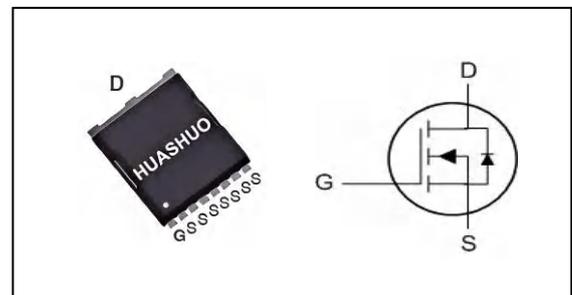
- 100% EAS Guaranteed
- Green Device Available
- Super Low $R_{DS(ON)}$
- Advanced high cell density SGT MOS Technology

Product Summary

V_{DS}	100	V
$R_{DS(ON),max}$	1	m Ω
I_D	455	A

Applications

- MOTOR Driver
- UPS
- Power Tools
- Synchronous Rectification in SMPS

TOLL Pin Configuration

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^{1,6}$	455	A
$I_D@T_C=100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^{1,6}$	360	A
I_{DM}	Pulsed Drain Current ²	1820	A
EAS	Single Pulse Avalanche Energy ³	2800	mJ
I_{AS}	Avalanche Current	100	A
$P_D@T_C=25^\circ C$	Total Power Dissipation ⁴	500	W
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	---	40	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	0.25	$^\circ C/W$

N-Ch 100V Fast Switching MOSFETs
Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	100	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V , I _D =90A	---	1	1.2	mΩ
		V _{GS} =6V , I _D =20A	---	1.4	1.8	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	2.0	3.2	4.0	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =80V , V _{GS} =0V , T _J =25°C	---	---	1	uA
		V _{DS} =80V , V _{GS} =0V , T _J =125°C	---	---	5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V , V _{DS} =0V	---	---	± 100	nA
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f= 1MHz	---	0.45	---	Ω
Q _g	Total Gate Charge (10V)	V _{DS} =50V , V _{GS} =10V , I _D =90A	---	285	---	nC
Q _{gs}	Gate-Source Charge		---	74	---	
Q _{gd}	Gate-Drain Charge		---	87	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =50V , V _{GS} =10V , R _G =3.0Ω, I _D =20A	---	39	---	ns
T _r	Rise Time		---	86	---	
T _{d(off)}	Turn-Off Delay Time		---	181	---	
T _f	Fall Time		---	116	---	
C _{iss}	Input Capacitance	V _{DS} =50V , V _{GS} =0V , f=1MHz	---	15770	---	pF
C _{oss}	Output Capacitance		---	2100	---	
C _{rss}	Reverse Transfer Capacitance		---	100	---	

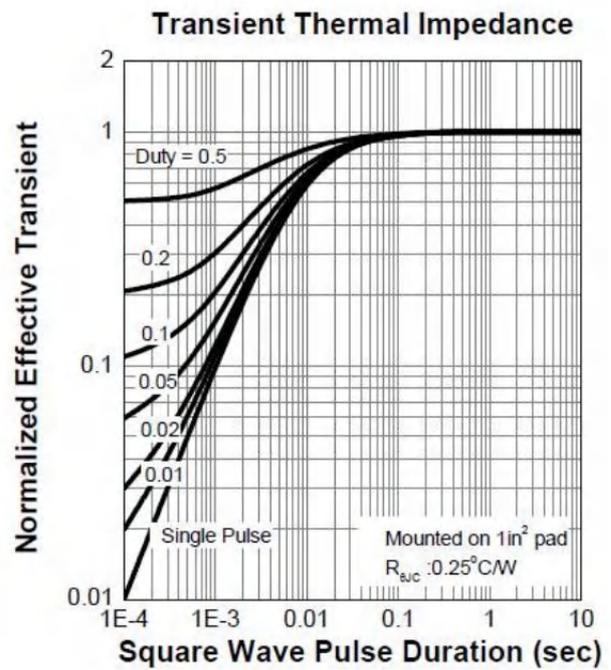
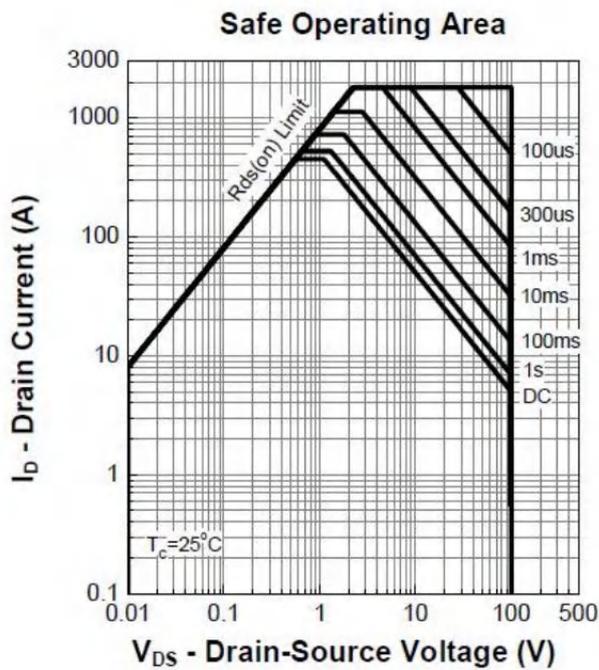
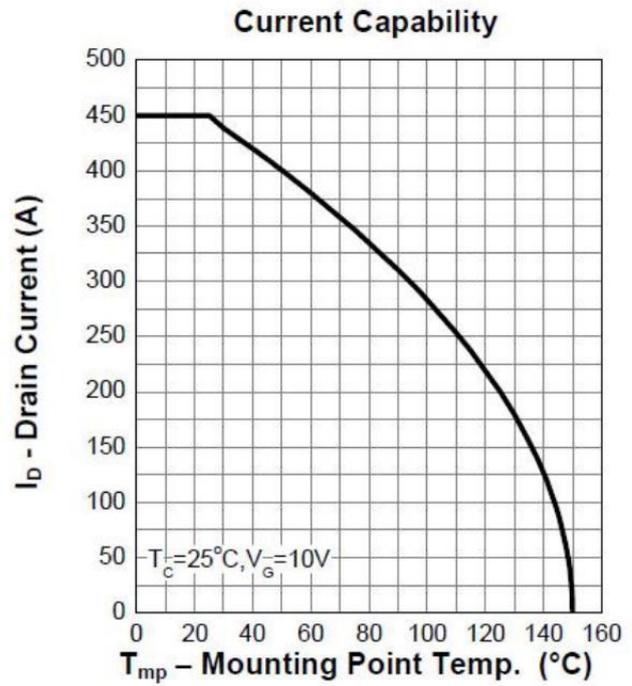
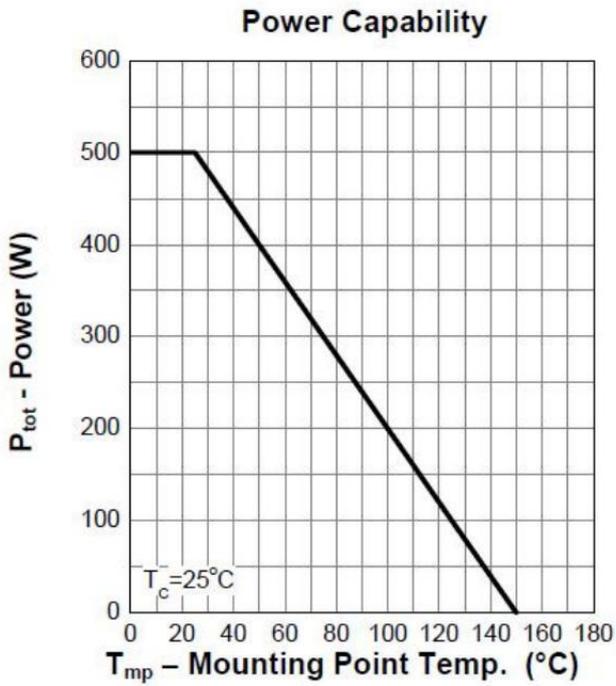
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V , I _S =50A , T _J =25°C	---	---	1.2	V
t _{rr}	Reverse Recovery Time	I _F =20A , di/dt=100A/μs ,	---	119	---	nS
Q _{rr}	Reverse Recovery Charge	T _J =25°C	---	415	---	nC

Note :

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
3. The EAS data shows Max. rating . The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=40A
4. The power dissipation is limited by 150°C junction temperature
5. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.
6. Package limitation current.

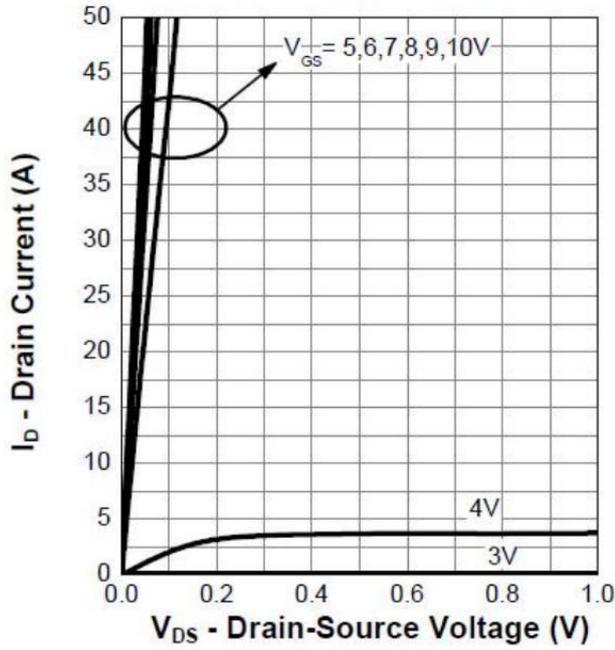
Typical Characteristics



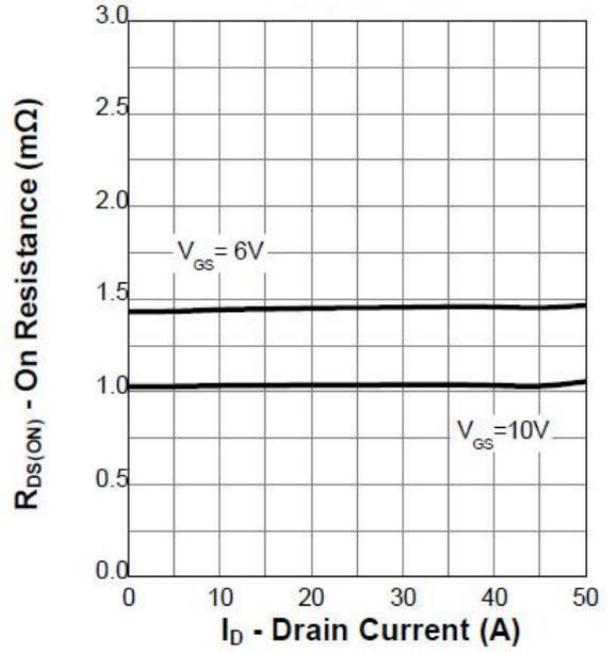


N-Ch 100V Fast Switching MOSFETs

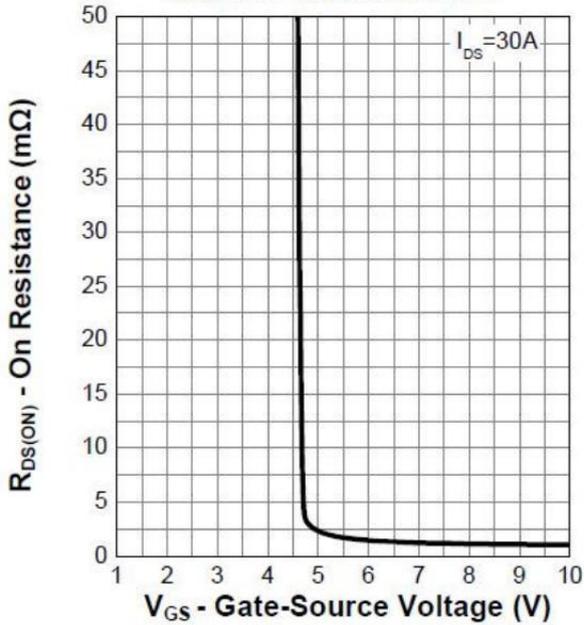
Output Characteristics



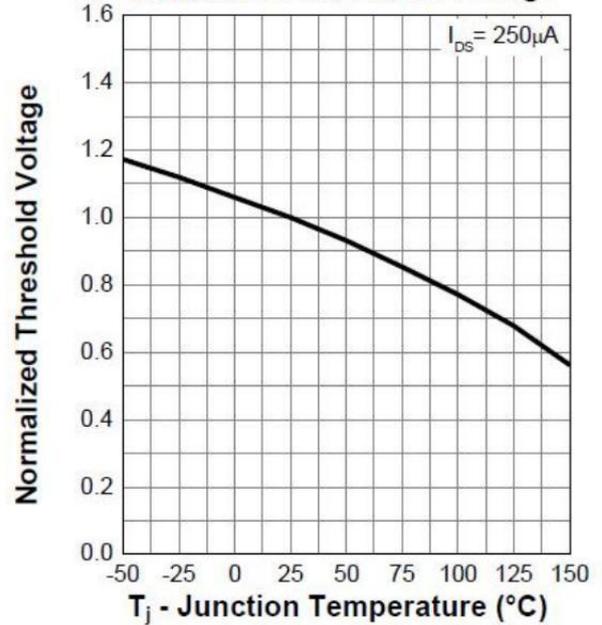
On Resistance



Transfer Characteristics

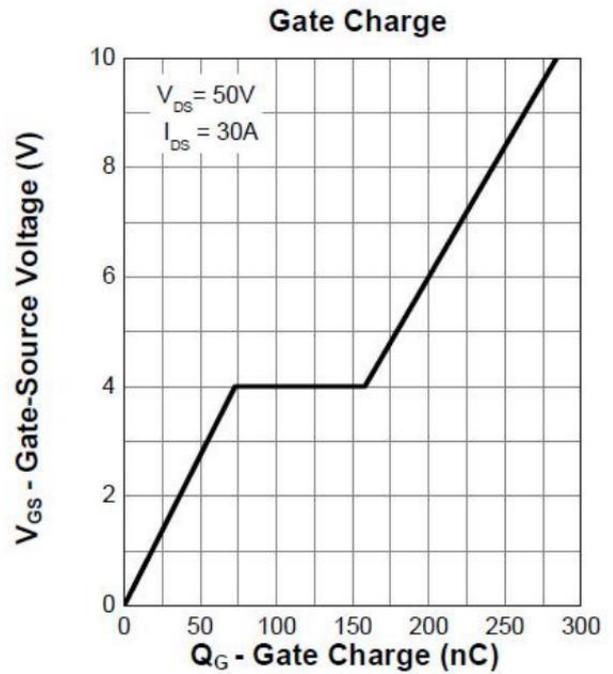
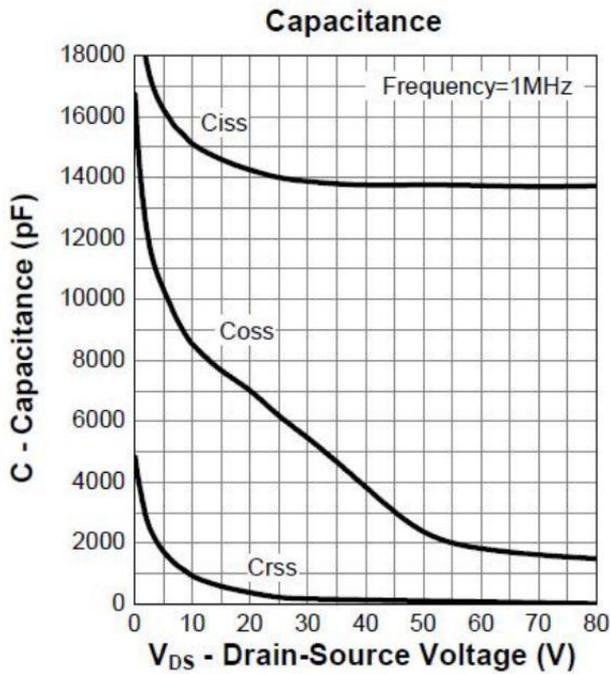
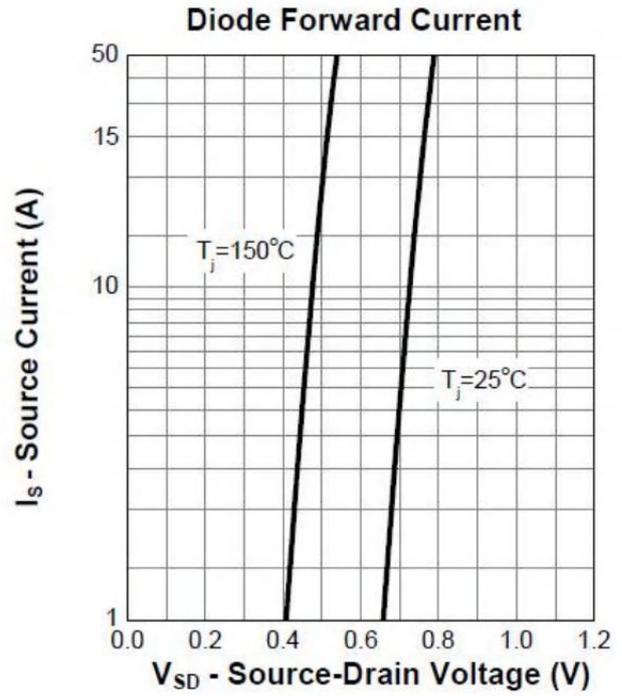
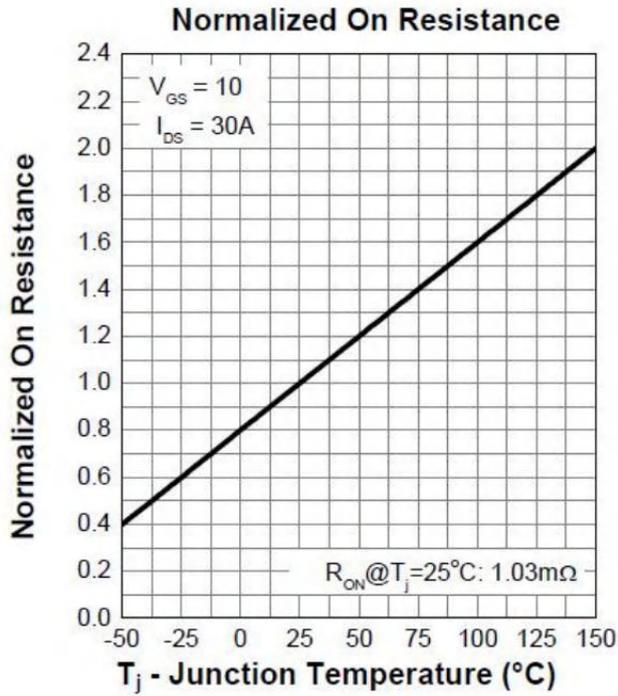


Normalized Threshold Voltage





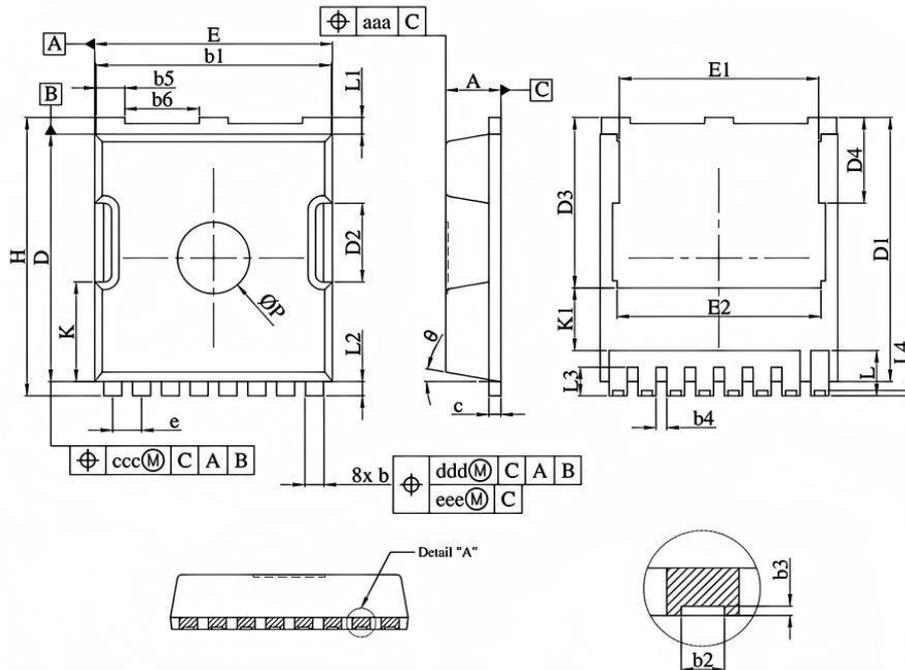
N-Ch 100V Fast Switching MOSFETs



Ordering Information

Part Number	Package code	Packaging
HSY0078A	TOLL	2000/Tape&Reel

TOLL Package Outline



COMMON DIMENSIONS(MM)							
SYMBOL	MIN.	NOMINAL	MAX.	SYMBOL	MIN.	NOMINAL	MAX.
A	2.20	2.30	2.40	E1	8.20	8.30	8.40
b	0.70	0.80	0.90	E2	8.35	8.50	8.65
b1	9.70	9.80	9.90	H	11.50	11.68	11.85
b2	0.36	0.45	0.55	K	4.08	4.18	4.28
b3	0.05	0.100	0.35	K1	2.45	---	---
b4	0.30	0.40	0.50	L	1.60	1.90	2.10
b5	1.10	1.20	1.30	L1	0.50	0.70	0.90
b6	3.00	3.10	3.20	L2	0.50	0.60	0.70
C	0.40	0.50	0.60	L3	1.00	1.20	1.30
D	10.28	10.38	10.55	L4	0.13	0.23	0.33
D1	10.98	11.08	11.18	P	2.85	3.00	3.15
D2	3.20	3.30	3.40	θ	10°REF		
D3	7.00	7.15	7.30	aaa	0.20		
D4	3.44	3.59	3.74	ccc	0.20		
e	1.10	1.20	1.30	ddd	0.25		
E	9.80	9.90	10.00	eee	0.20		

HSY0078A Marking:

