MOSFET – Power, Single MCPH6, P-Channel

-12 V, -6.0 A, 35 mΩ

MCH6353

V_{DSS}	$R_{DS(ON)}$ MAX	I_D MAX
−12 V	35 mΩ @ −4.5 V	−6.0 A
	48 mΩ @ −2.5 V	
	78 mΩ @ −1.8 V	
	140 mΩ @ −1.5 V	

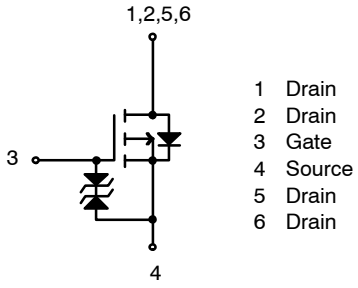
Features

- ON−Resistance $R_{DS(on)}1$ = 29 mΩ (typ)
- 1.5 V Drive
- Protection Diode in
- This Device is Pb−Free and Halogen Free and RoHS Compliant

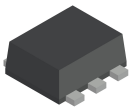
ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Conditions	Value	Unit
Drain−to−Source Voltage	V_{DSS}		−12	V
Gate−to−Source Voltage	V_{GSS}		±10	V
Drain Current (DC)	I_D		−6.0	A
Drain Current (Pulse)	I_{DP}	PW ≤ 10 μs, duty cycle ≤ 1%	−24	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (1500 mm^2 x 0.8 mm)	1.4	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



ELECTRICAL CONNECTION P−CHANNEL



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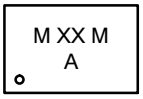
MARKING DIAGRAM



XX = Specific Device Code, NC
M = Date Code
Left Side = Jan tu Jun
Right Side = Jul to Dec
A = Location Code

ORDERING INFORMATION

Device	Package	Shipping†
MCH6353−TL−W	MCPH6 SC−88, SOT−363 (Pb−Free, Halogen Free)	3000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Value			Unit
			Min	Typ	Max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = −1 mA, V_{GS} = 0 V	−12	–	–	V
Zero−Gate Voltage Drain Current	I_{DSS}	V_{DS} = −12 V, V_{GS} = 0 V	–	–	−1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS} = ±8 V, V_{DS} = 0 V	–	–	±1	μA
Cutoff Voltage	V_{GS}(off)	V_{DS} = −6 V, I_D = −1 mA	−0.4	–	−1.4	V
Forward Transfer Admittance	| yfs |	V_{DS} = −6 V, I_D = −3 A	–	11	–	S
Static Drain to Source On−State Resistance	R_{DS}(on)1	I_D = −3 A, V_{GS} = −4.5 V	–	29	35	mΩ
	R_{DS}(on)2	I_D = −1.5 A, V_{GS} = −2.5 V	–	38	48	mΩ
	R_{DS}(on)3	I_D = −0.5 A, V_{GS} = −1.8 V	–	52	78	mΩ
	R_{DS}(on)4	I_D = −0.5 A, V_{GS} = −1.5 V	–	70	140	mΩ
Input Capacitance	Ciss	V_{DS} = −6 V, f = 1 MHz	–	1250	–	pF
Output Capacitance	Coss		–	160	–	pF
Reverse Transfer Capacitance	Crss		–	150	–	pF
Turn−ON Delay Time	t_d(on)	See specified Test Circuit	–	8.4	–	ns
Rise Time	t_r		–	48	–	ns
Turn−OFF Delay Time	t_d(off)		–	165	–	ns
Fall Time	t_f		–	68	–	ns
Total Gate Charge	Qg	V_{DS} = −6 V, V_{GS} = −4.5 V, I_D = −6.0 A	–	12	–	nC
Gate to Source Charge	Qgs		–	1.7	–	nC
Gate to Drain “Miller” Charge	Qgd		–	2.1	–	nC
Diode Forward Voltage	V_{SD}	I_S = −6 A, V_{GS} = 0 V	–	−0.9	−1.2	V

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

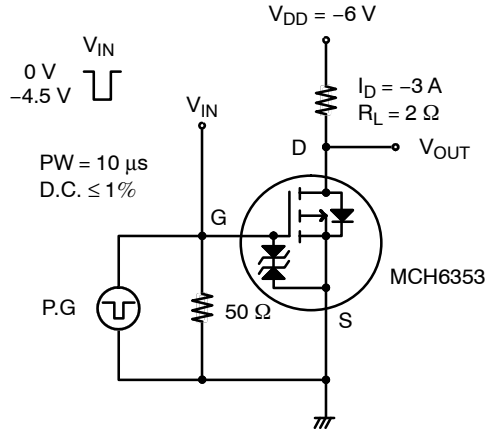


Figure 1. Switching Time Test Circuit

TYPICAL CHARACTERISTICS

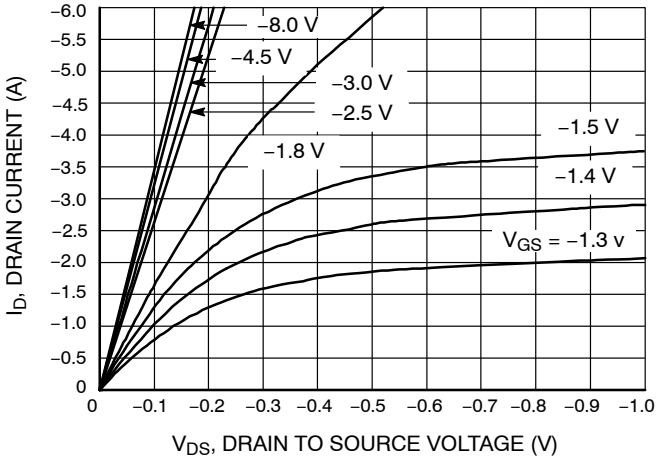


Figure 2. I_D – V_{DS}

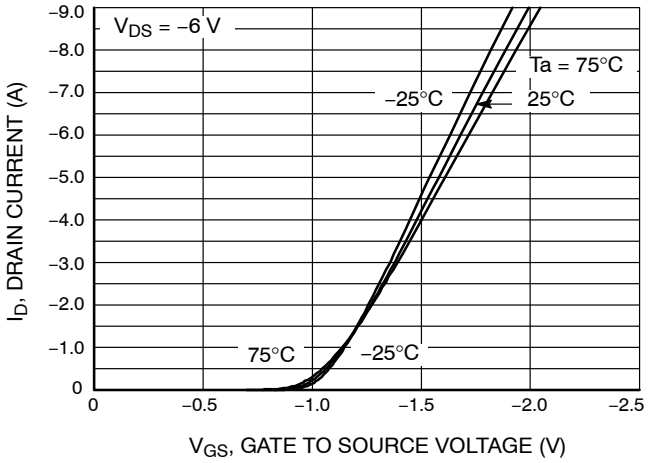


Figure 3. I_D – V_{GS}

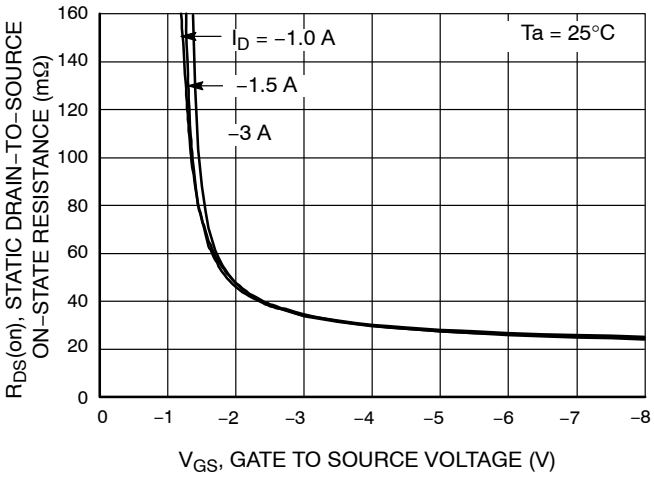


Figure 4. $R_{DS}(on)$ – V_{GS}

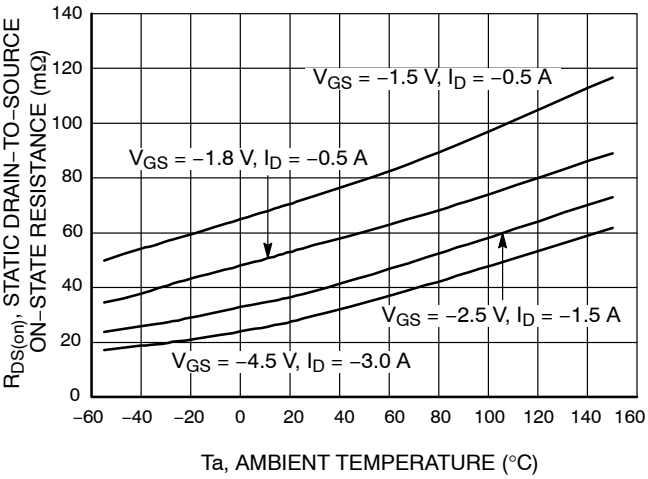


Figure 5. $R_{DS}(on)$ – Ta

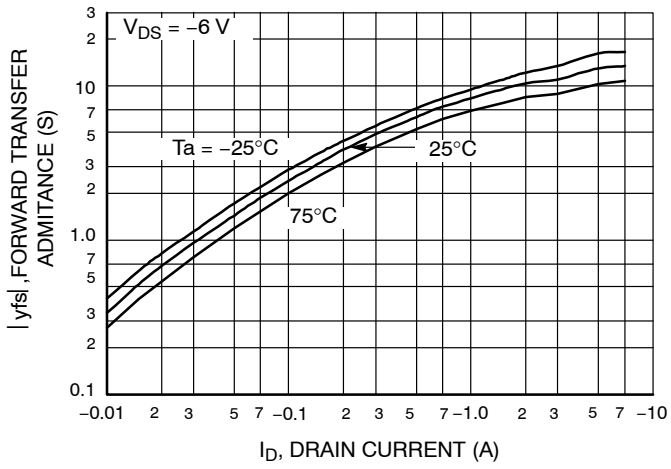


Figure 6. | yfs | – I_D

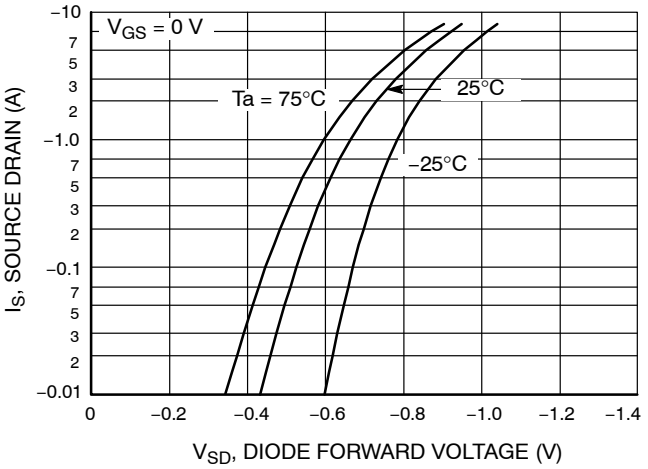


Figure 7. I_S – V_{DS}

TYPICAL CHARACTERISTICS (CONTINUED)

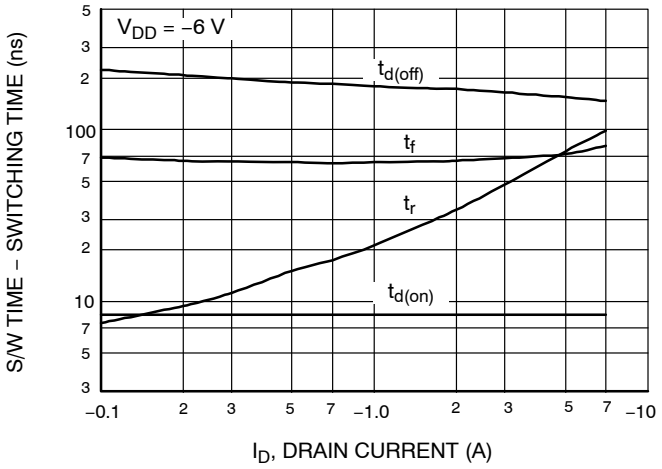


Figure 8. S/W Time – I_D

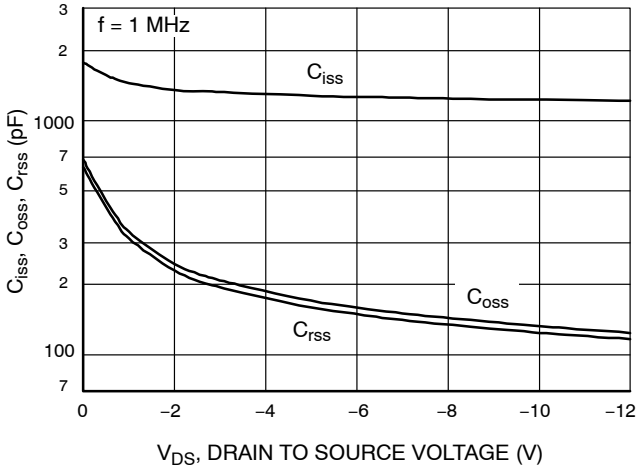


Figure 9. C_{iss}, C_{oss}, C_{rss} – V_{DS}

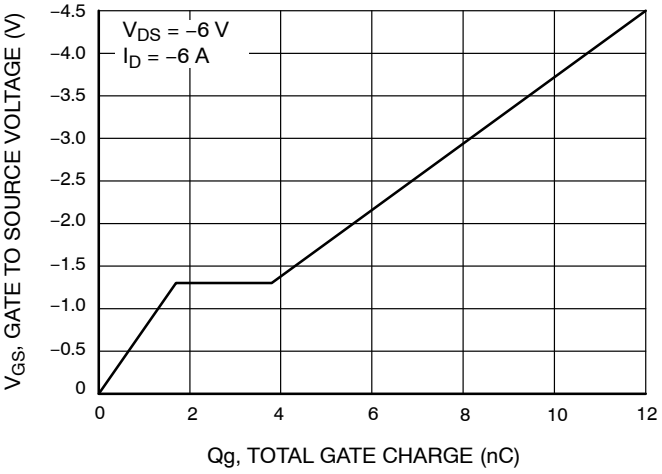


Figure 10. Q_g – V_{GS}

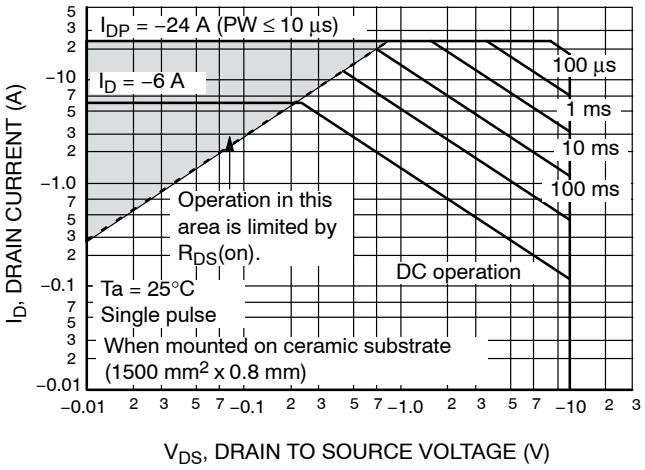


Figure 11. ASO

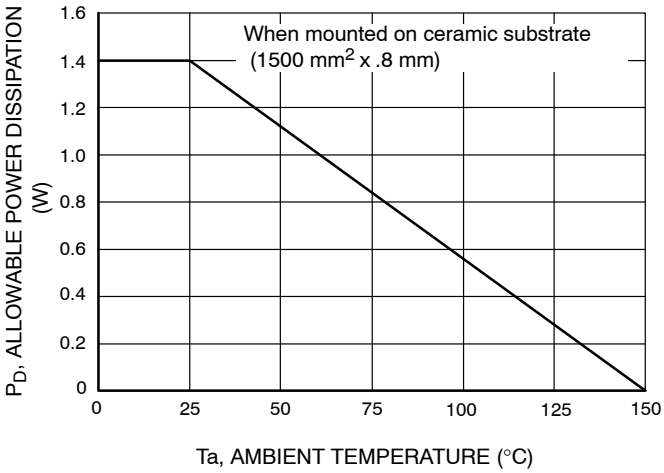
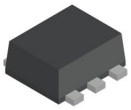


Figure 12. P_D – Ta



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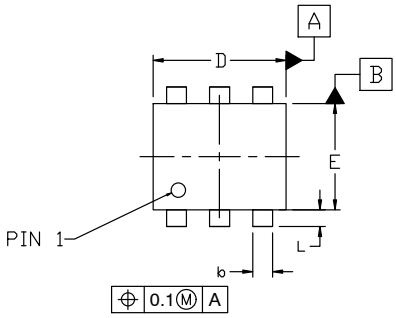
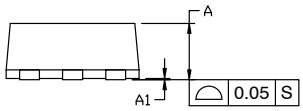
ISSUE A

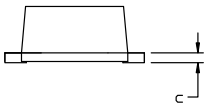
DATE 28 SEP 2022



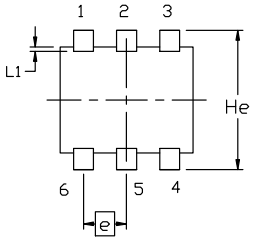
TOP VIEW



SIDE VIEW



FRONT VIEW



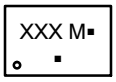
BOTTOM VIEW

NOTES:

1. NO INDUSTRY STANDARD APPLIES TO THIS PACKAGE.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND THE BAR PROTRUSIONS.

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.80	0.85	0.90
A1	0.00	---	0.02
b	0.25	0.30	0.40
c	0.12	0.15	0.25
D	1.94	2.00	2.06
E	1.54	1.60	1.66
He	2.05	2.10	2.15
L	0.19	0.25	0.31
L1	0.00	0.07	0.12
e	0.65 BSC		

GENERIC
MARKING DIAGRAM*



XXX = Specific Device Code
M = Date Code
▪ = Pb−Free Package

(Note: Microdot may be in either location)

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

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