

TPM30D2LC5

COMMON SOURCE DUAL N-Channel MOSFET

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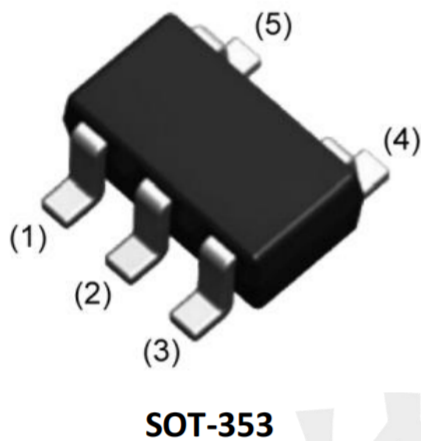
Product Summary

- V_{DS} 30 V
- I_{DS} 0.8A
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) $\leq 450m\Omega$
- $R_{DS(ON)}$ (at $V_{GS}=2.5V$) $\leq 650m\Omega$

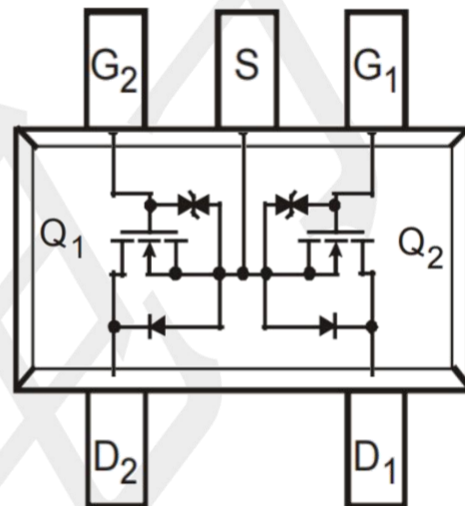
Application

- Reverse Battery protection
- Load switch
- Power management
- Motor Control

Package and Pin Configuration



Circuit diagram



Absolute Maximum Ratings $(T_A=25^{\circ}C$ unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	0.8	A
Total Power Dissipation	P_{DTOT}	0.28	W
Operating Junction Temperature Range	T_J	-55 to +150	$^{\circ}C$
Storage Temperature Range	T_{stg}	-55 to +150	$^{\circ}C$

Thermal Characteristic

PARAMETER	Symbol	Value	Unit
Junction-to-Ambient Thermal Resistance	R_{thJA}	446	$^{\circ}C/W$

Note : When mounted on 1" square PCB (FR4 material).

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Electrical Characteristics (T_A=25°C unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static						
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D= 250\mu A$	BV_{DSS}	30	--	--	V
Gate-Source Threshold Voltage	$V_{DS}=V_{GS}, I_D= 250\mu A$	$V_{GS(th)}$	0.5	0.8	1.2	V
Gate-Source Leakage	$V_{DS}=0V, V_{GS}= \pm 12V$	I_{GSS}	--	--	± 20	μA
Zero Gate Voltage Drain Current	$V_{DS}= 30V, V_{GS}=0V$	I_{DSS}	--	--	1	μA
	$V_{DS}= 30V, T_J=125^{\circ}C$		--	--	10	μA
Drain-Source On-State Resistance (Note 1)	$V_{GS}= 4.5V, I_D= 0.5A$	$R_{DS(on)}$	--	350	450	m Ω
	$V_{GS}= 2.5V, I_D= 0.5A$		--	450	650	
Forward Transconductance (Note 2)	$V_{DS}= 4V, I_D= 0.3A$	g_{fs}	--	1.1	--	S
Dynamic (Note 2)						
Total Gate Charge (Note 3)	$V_{DS}= 15V, I_D= 0.3A,$ $V_{GS}= 4.5V$	Q_g	--	2.6	--	nC
Gate-Source Charge (Note 3)		Q_{gs}	--	1.0	--	
Gate-Drain Charge (Note 3)		Q_{gd}	--	0.6	--	
Input Capacitance	$V_{DS}= 15V, V_{GS}= 0V,$ $F= 1.0MHz$	C_{iss}	--	73	--	pF
Output Capacitance		C_{oss}	--	18	--	
Reverse Transfer Capacitance		C_{rss}	--	8.6	--	
Switching						
Turn-On Delay Time (Note 3)	$V_{DD}= 15V, I_D= 0.3A,$ $V_{GS}= 4.5V,$ $R_{GEN}= 10\Omega$	$t_{d(on)}$	--	5.5	--	nS
Rise Time (Note 3)		t_r	--	4.8	--	
Turn-Off Delay Time (Note 3)		$t_{d(off)}$	--	15	--	
Fall Time (Note 3)		t_f	--	6.5	--	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	$V_{GS}= 0V, I_F= 0.15A$	V_{SD}	--	0.8	1.2	V

Notes:

1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

TYPICAL CHARACTERISTICS

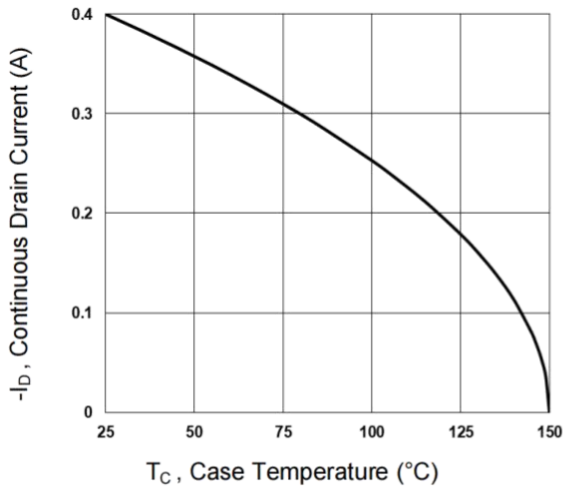


Figure 1. Continuous Drain Current vs. T_c

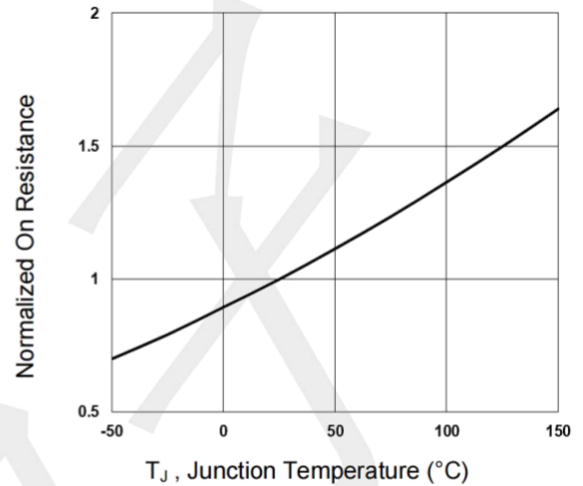


Figure 2. Normalized $R_{DS(on)}$ vs. T_j

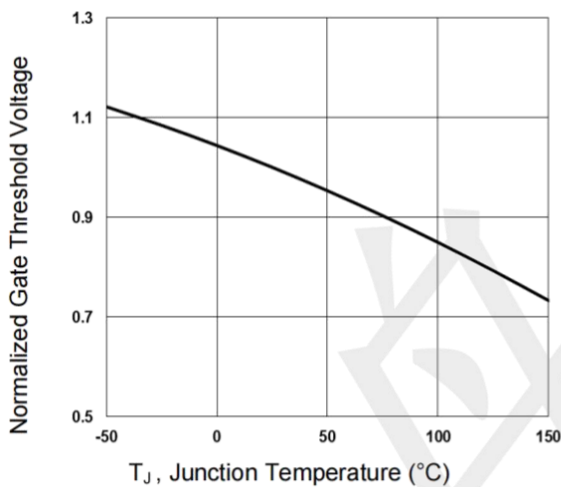


Figure 3. Normalized V_{th} vs. T_j

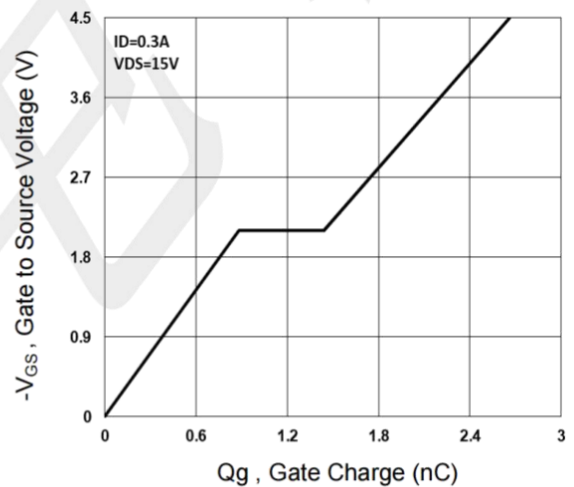


Figure 4. Gate Charge Waveform

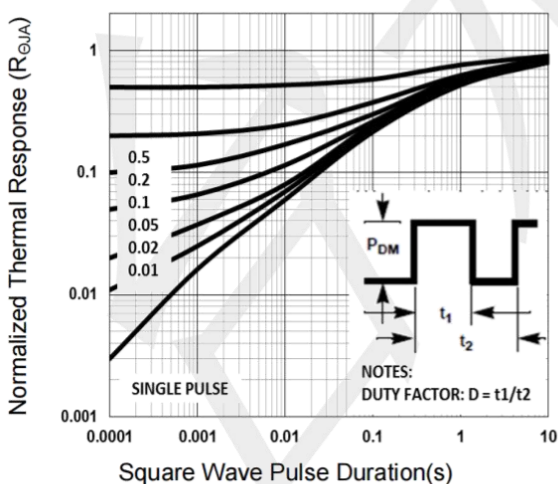


Figure 5. Normalized Transient Response

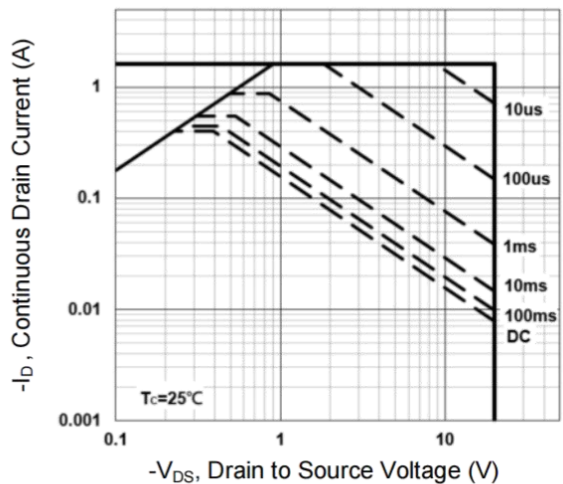
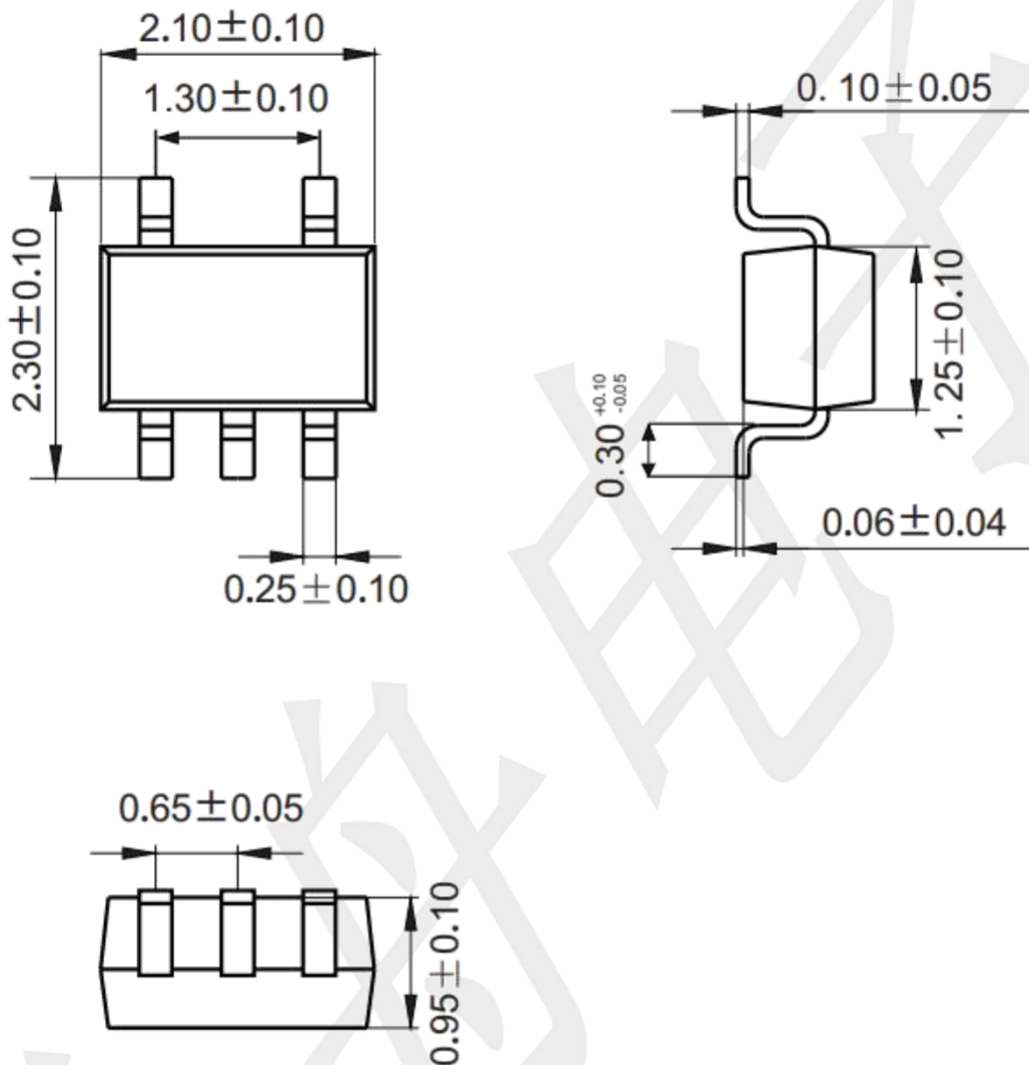


Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (unit: mm)

SOT-353



Mounting Pad Layout (unit: mm)

