

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	90mΩ@10V	5A

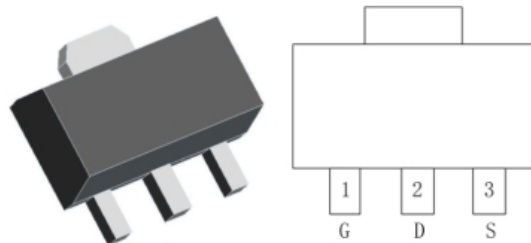
Feature

- $V_{DS} = 100V$
- $I_D = 5A$
- $R_{DS(ON)}$ (at $V_{GS}=10V$) < 130 mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) < 140 mohm

Application

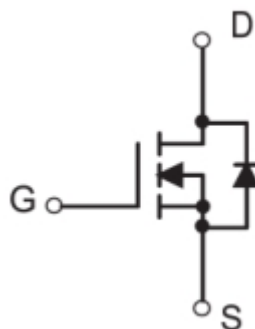
- DC-DC Converters
- Power management functions

Package

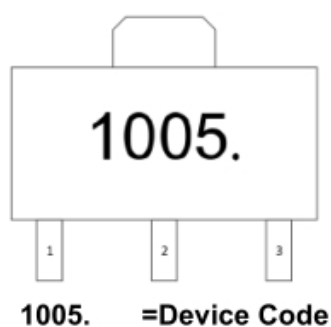


SOT-89-3L

Circuit diagram



Marking



Absolute maximum ratings

($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	5	W
Pulsed Drain Current	I_{DM}	20	A
Maximum Power Dissipation	P_D	1.5	W
		4.0	
Thermal Resistance,Junction-to-Ambient ¹	$R_{\theta JA}$	83	$^{\circ}\text{C}/\text{W}$
Thermal Resistance Junction-to-Case ¹	$R_{\theta JC}$	31	$^{\circ}\text{C}/\text{W}$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~ +150	$^{\circ}\text{C}$

Electrical characteristics

($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	100	110		V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = 100V, V_{GS} = 0V$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	μA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.5	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 5A$		90	130	m Ω
		$V_{GS} = 4.5V, I_D = 3A$		100	140	
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 50V, V_{GS} = 0V,$ $f = 1MHz$		790		pF
Output Capacitance	C_{oss}			38		
Reverse Transfer Capacitance	C_{rss}			30		
Total Gate Charge	Q_g	$V_{GS} = 10V, V_{DS} = 50V,$ $I_D = 3A$		16		nC
Gate-Source Charge	Q_{gs}			2.5		
Gate-Drain Charge	Q_{gd}			2.6		
Switching Characteristics						
Turn-On Delay Time	$T_{d(on)}$	$V_{GS} = 10V, V_{DD} = 50V,$ $R_L = 6.4\Omega, R_{GEN} = 3\Omega$		5		nS
Rise Time	T_r			40		
Turn-Off Delay Time	$T_{d(off)}$			20		
Fall Time	T_f			7		
Drain-Source Diode Characteristics						
Diode forward voltage	V_{SD}	$V_{GS} = 0V, I_S = 1A$			1.2	V
Diode Forward Current	I_S				6	A

Notes:

1. Surface Mounted on FR4 Board, $t \leq 10$ sec.
2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
3. Guaranteed by design, not subject to production

Typical Characteristics

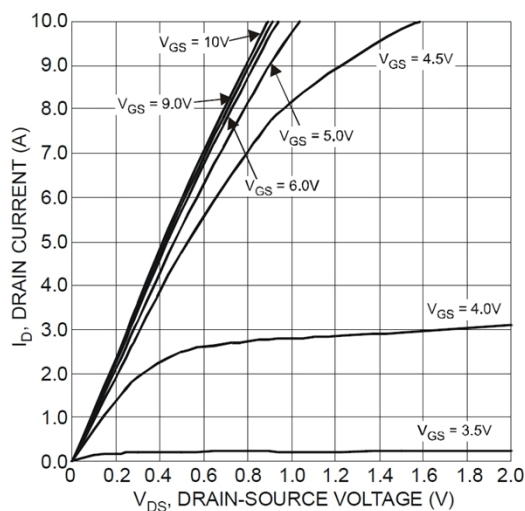


Figure 1 Typical Output Characteristic

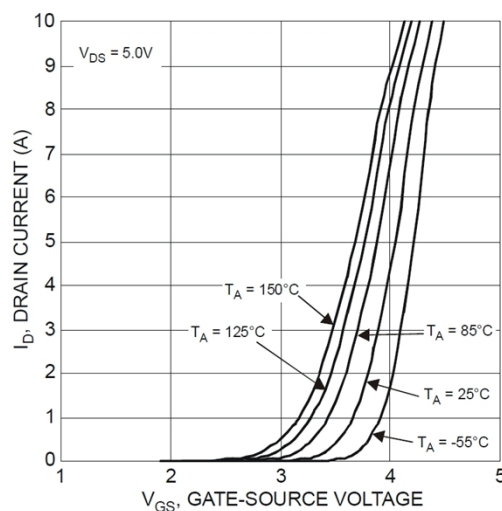


Figure 2 Typical Transfer Characteristics

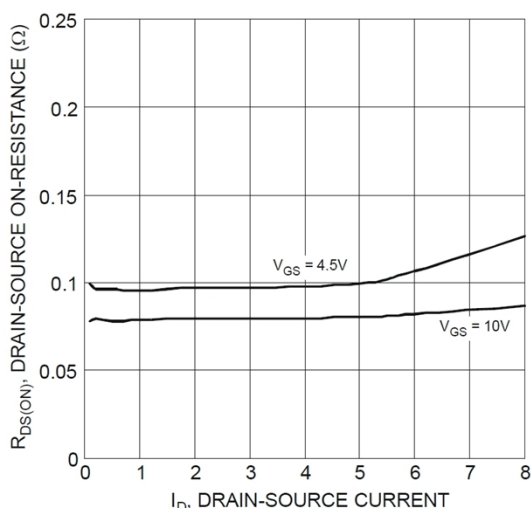


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

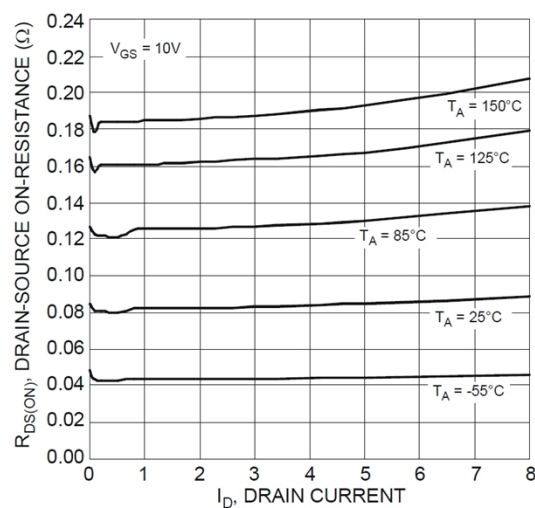


Figure 4 Typical On-Resistance vs. Drain Current and Temperature

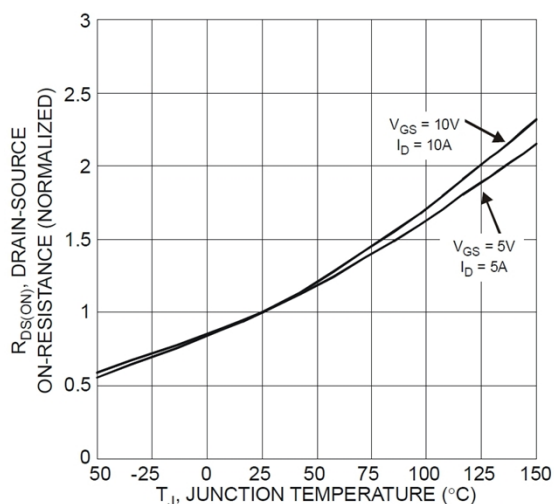


Figure 5 On-Resistance Variation with Temperature

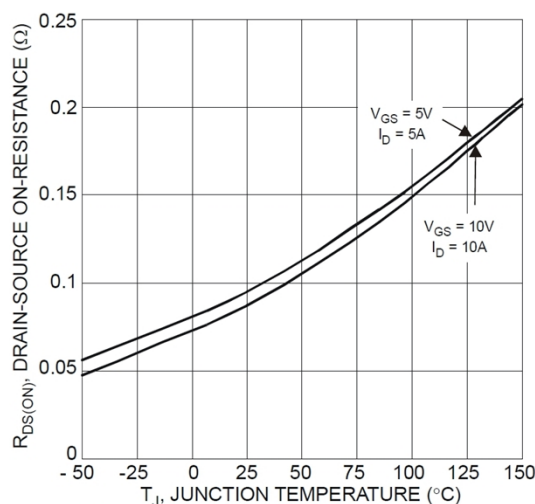


Figure 6 On-Resistance Variation with Temperature

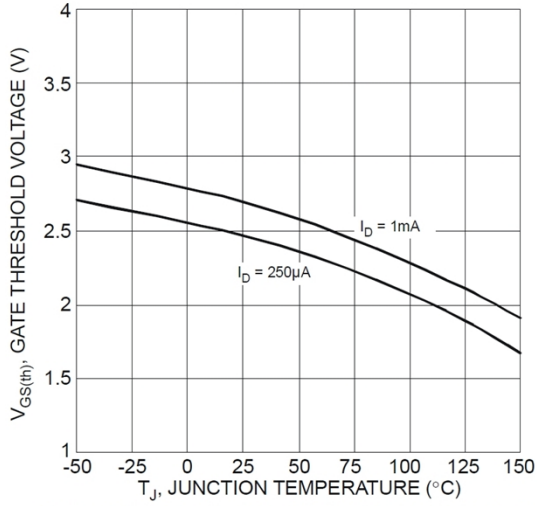


Figure 7 Gate Threshold Variation vs. Ambient Temperature

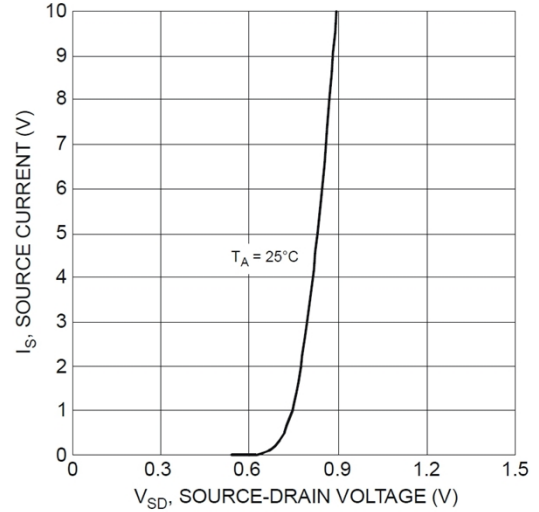


Figure 8 Diode Forward Voltage vs. Current

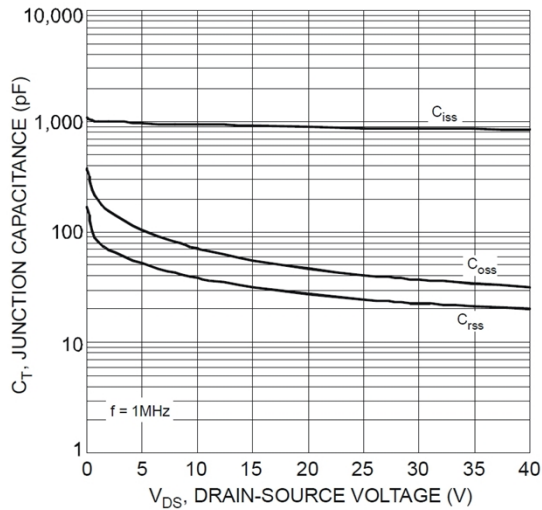


Figure 9 Typical Junction Capacitance

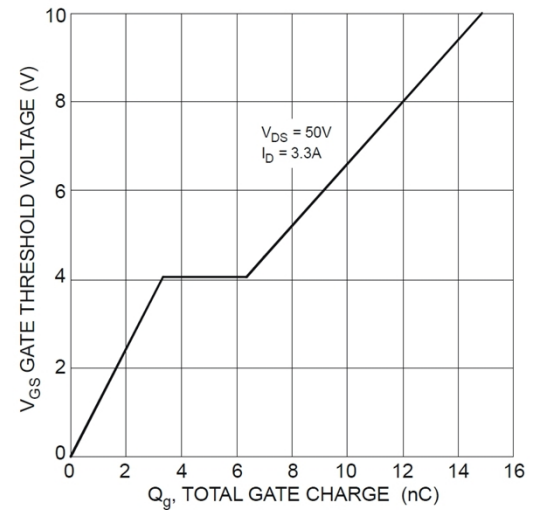


Figure 10 Gate Charge

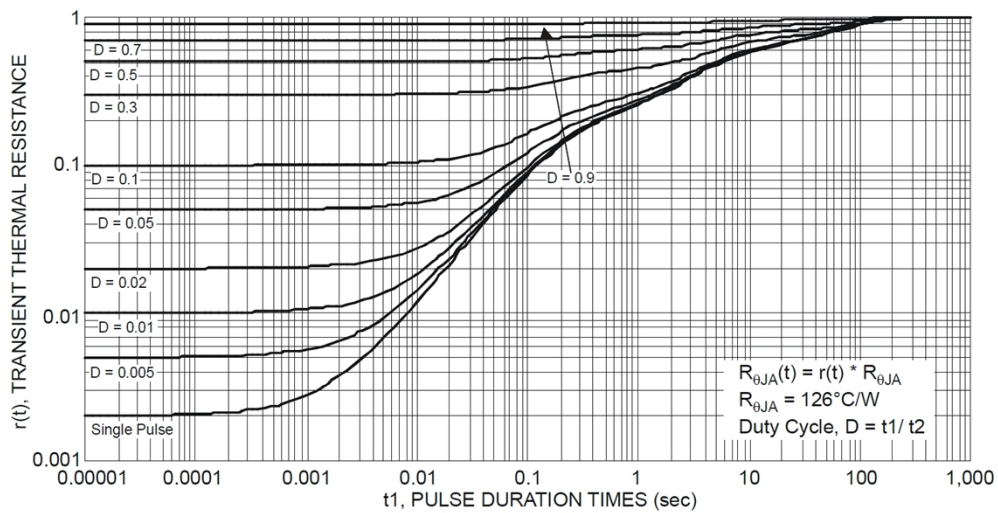
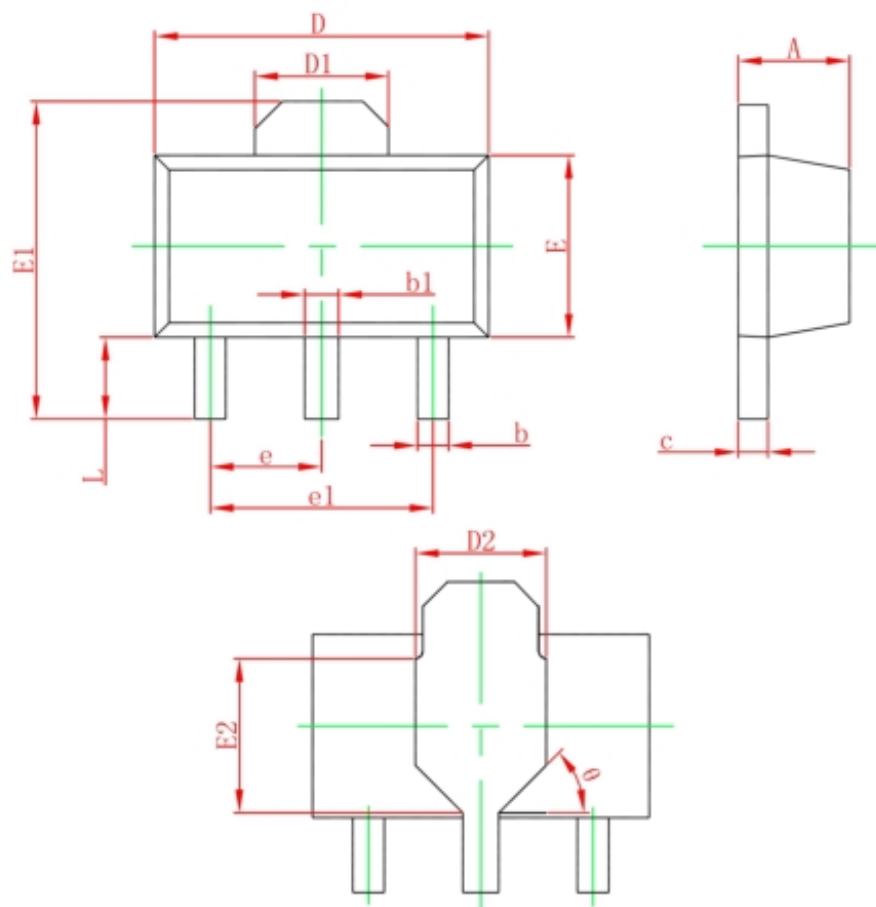


Figure 11 Transient Thermal Resistance

SOT-89-3L Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.400	1.600
b	0.320	0.520
b1	0.400	0.580
c	0.350	0.440
D	4.400	4.600
D1	1.550 REF.	
D2	1.750 REF.	
E	2.300	2.600
E1	3.940	4.250
E2	1.900 REF.	
e	1.500 TYP.	
e1	3.000 TYP.	
L	0.900	1.200
θ	45°	