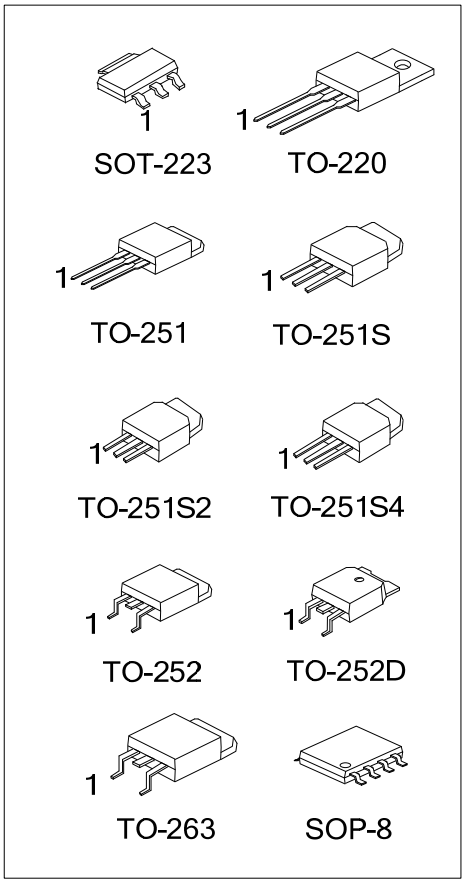
12P10

Power MOSFET

-9.4A, -100V P-CHANNEL POWER MOSFET



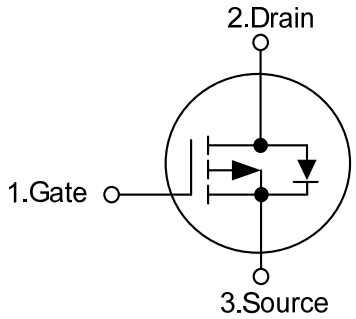
■ DESCRIPTION

The **12P10** uses advanced proprietary, planar stripe, DMOS technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable to be used in low voltage applications such as audio amplifier, high efficiency switching DC/DC converters, and DC motor control.

■ FEATURES

* $R_{DS(ON)}$ < 0.29Ω @ V_{GS}=-10V, I_D=-4.7A
* Low capacitance
* Low gate charge
* Fast switching capability
* Avalanche energy specified

■ SYMBOL

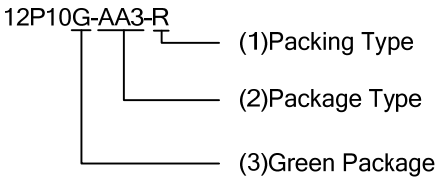


Copyright © 2016 Unisonic Technologies Co., Ltd

■ ORDERING INFORMATION

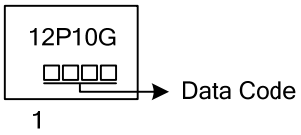
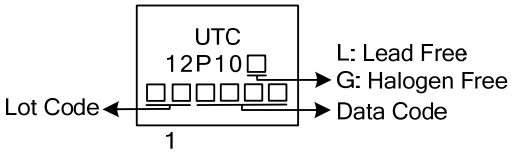
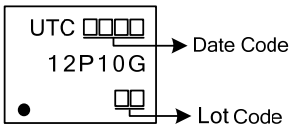
Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
-	12P10G-AA3-R	SOT-223	G	D	S	-	-	-	-	-	Tape Reel
12P10L-TA3-T	12P10G-TA3-T	TO-220	G	D	S	-	-	-	-	-	Tube
12P10L-TM3-T	12P10G-TM3-T	TO-251	G	D	S	-	-	-	-	-	Tube
12P10L-TMS-T	12P10G-TMS-T	TO-251S	G	D	S	-	-	-	-	-	Tube
12P10L-TMS2-T	12P10G-TMS2-T	TO-251S2	G	D	S	-	-	-	-	-	Tube
12P10L-TMS4-T	12P10G-TMS4-T	TO-251S4	G	D	S	-	-	-	-	-	Tube
12P10L-TN3-R	12P10G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
12P10L-TND-R	12P10G-TND-R	TO-252D	G	D	S	-	-	-	-	-	Tape Reel
12P10L-TQ2-R	12P10G-TQ2-R	TO-263	G	D	S	-	-	-	-	-	Tape Reel
12P10L-TQ2-T	12P10G-TQ2-T	TO-263	G	D	S	-	-	-	-	-	Tube
-	12P10G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

Note: Pin Assignment: G: Gate D: Drain S: Source



(1) R: Tape Reel, T: Tube
(2) AA3: SOT-223, TA3: TO-220, TM3: TO-251, TMS: TO-251S, TMS2: TO-251S2, TMS4: TO-251S4 TN3: TO-252, TND: TO-252D, TQ2: TO-263 S08: SOP-8
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

PACKAGE		MARKING
SOT-223		
TO-220 TO-251 TO-251S TO-251S2	TO-251S4 TO-252 TO-252D TO-263	
SOP-8		

■ ABSOLUTE MAXIMUM RATINGS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	-100	V
Gate-Source Voltage		V_{GSS}	±30	V
Continuous Drain Current		I_D	-9.4	A
Pulsed Drain Current (Note 2)		I_{DM}	-37.6	A
Avalanche Current (Note 2)		I_{AR}	-9.4	A
Single Pulsed Avalanche Energy (Note 3)		E_{AS}	280	mJ
Repetitive Avalanche Energy (Note 2)		E_{AR}	5.0	mJ
Power Dissipation	TO-220/TO-263	P_D	73	W
	TO-251/TO-251S TO-251S2/TO-251S4 TO-252/TO-252D		50	W
	SOT-223		8	W
	SOP-8		5	W
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Pulse width limited by $T_{J(MAX)}$
3. L=6.3mH, I_{AS}=-9.4A, V_{DD}=-25V, R_G=25Ω, Starting T_J=25°C
4. I_{SD}≤-11.5A, di/dt≤300μA/ s, V_{DD}≤BV_{DSS}, Starting T_J=25°C

■ THERMAL DATA

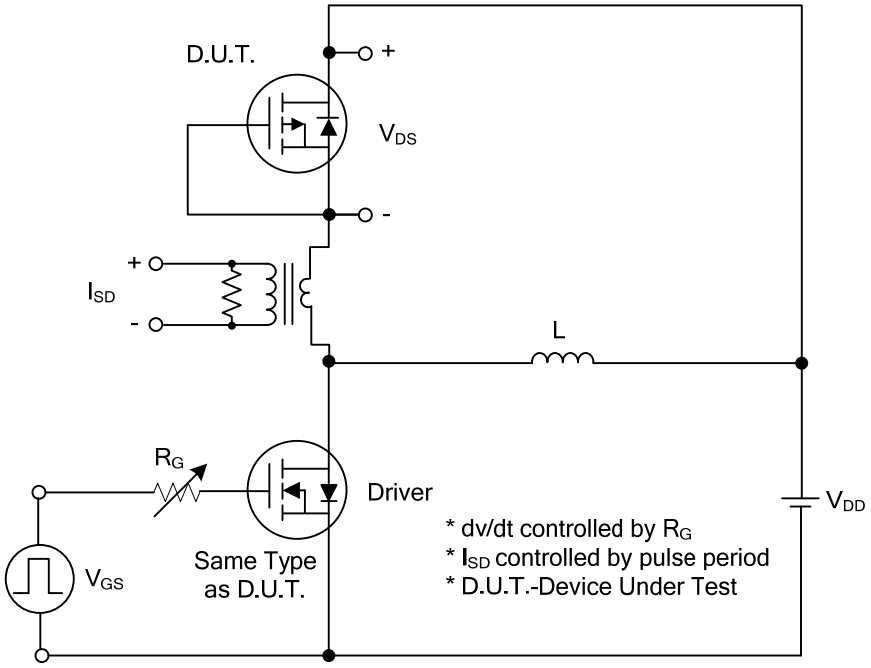
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-263	θ_{JA}	62.5	°C/W
	TO-251/TO-251S TO-251S2/TO-251S4 TO-252/TO-252D		110	°C/W
	TO-263		62.5	°C/W
	SOT-223		125	°C/W
	SOP-8		150	°C/W
Junction to Case	TO-220/TO-263	θ_{JC}	1.9	°C/W
	TO-251/TO-251S TO-251S2/TO-251S4 TO-252/TO-252D		2.5	°C/W
	SOT-223		14	°C/W
	SOP-8		25	°C/W

■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

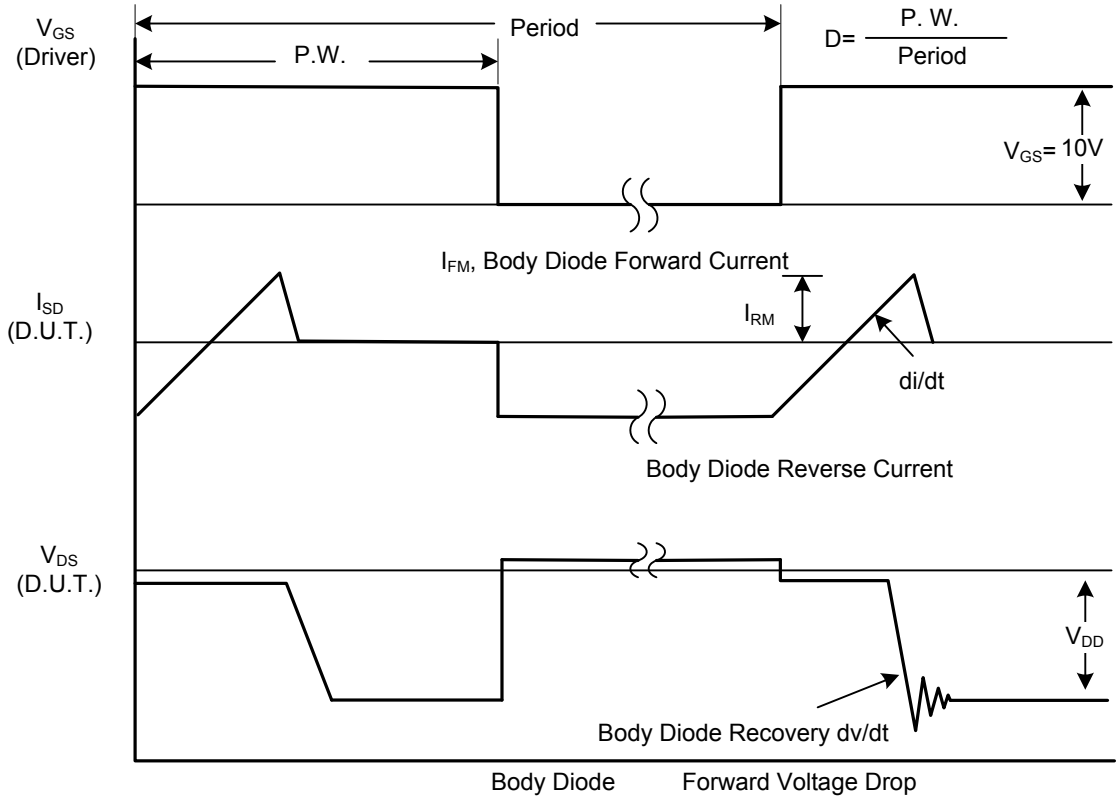
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0 V, I_D=-250μA	-100			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-100V, V_{GS}=0V			-1	μA
		V_{DS}=-100V, T_C=125°C			-10	μA
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±30V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250μA	-2.0		-4.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-4.7A		0.24	0.29	Ω
Forward Transconductance	g_{FS}	V_{DS} =-40V, I_D=-4.7A (Note 1)		6.3		S
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=-25V, V_{GS}=0V, f=1.0MHz		570	800	pF
Output Capacitance	C_{OSS}			115	290	pF
Reverse Transfer Capacitance	C_{RSS}			30	85	pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	V_{DS}=-50V, I_D=-1.3A, V_{GS}=-10V(Note 1, 2)		21	27	nC
Gate Source Charge	Q_{GS}			4.6		nC
Gate Drain Charge	Q_{GD}			4		nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{DD}=-30V, I_D=-0.5A, R_G=25Ω (Note 1, 2)		40	50	ns
Turn-ON Rise Time	t_R			64	100	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			255	275	ns
Turn-OFF Fall-Time	t_F			70	90	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				-9.4	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				-37.6	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-9.4A			-4.0	V

Notes: 1. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%
2. Essentially independent of operating temperature

■ TEST CIRCUITS AND WAVEFORMS

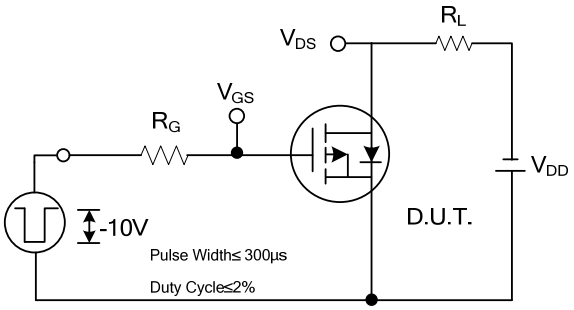


Peak Diode Recovery dv/dt Test Circuit

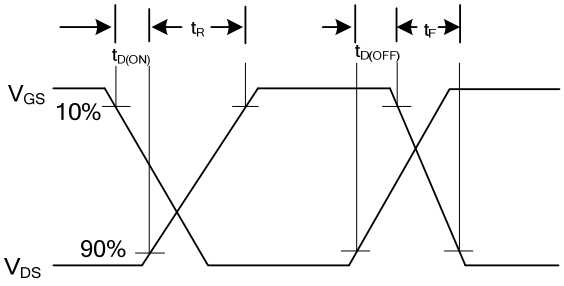


Peak Diode Recovery dv/dt Waveforms

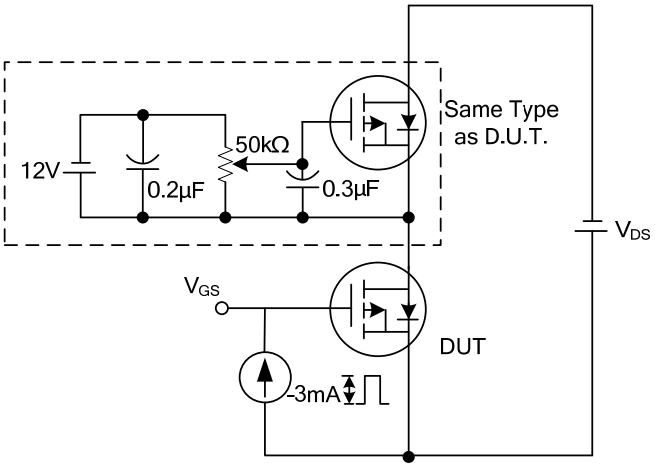
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



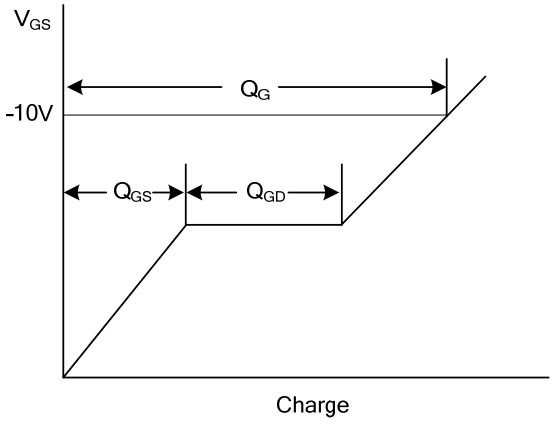
Switching Test Circuit



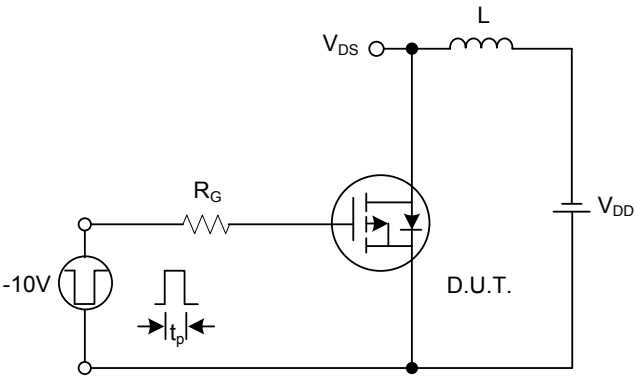
Switching Waveforms



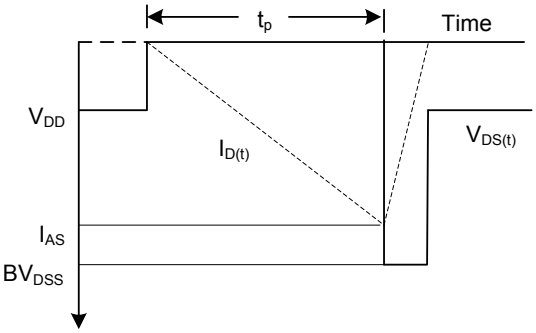
Gate Charge Test Circuit



Gate Charge Waveform



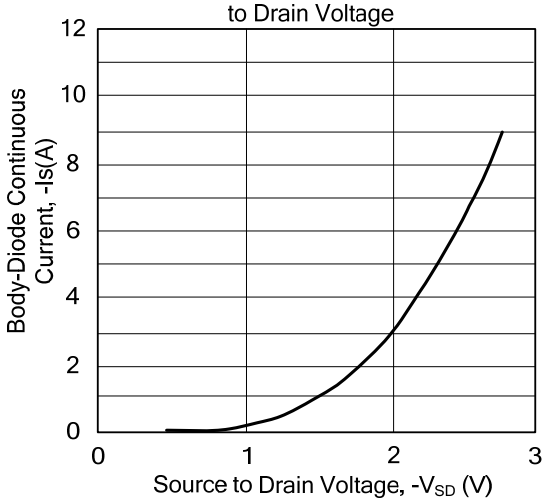
Unclamped Inductive Switching Test Circuit



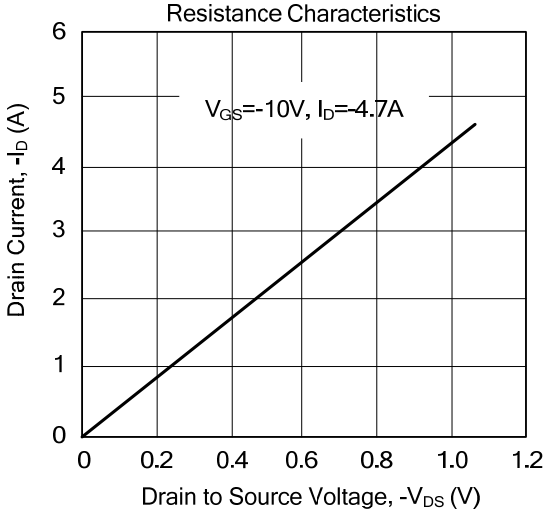
Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS

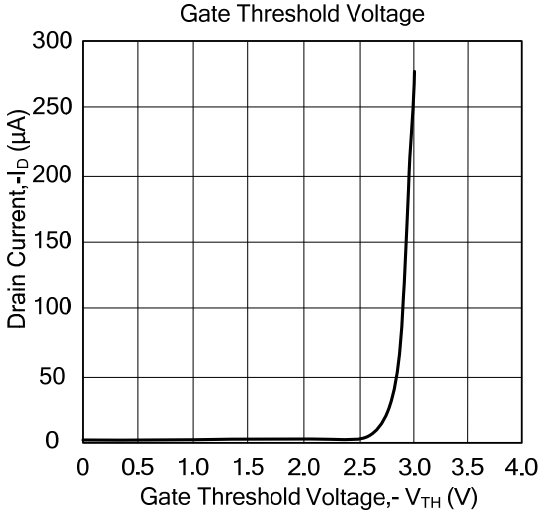
Body-Diode Continuous Current vs. Source to Drain Voltage



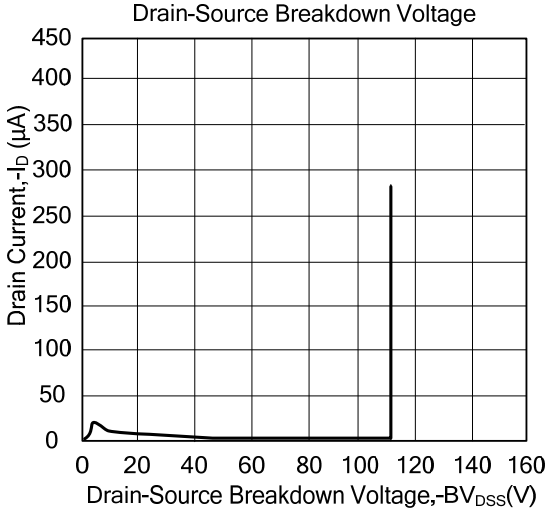
Drain-Source On-State Resistance Characteristics



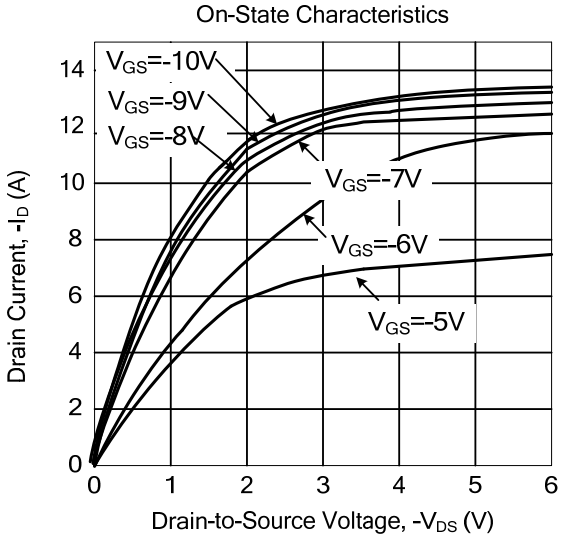
Drain Current vs. Gate Threshold Voltage



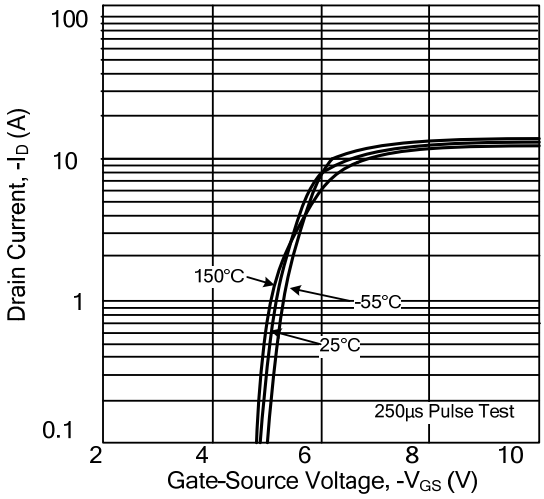
Drain Current vs. Drain-Source Breakdown Voltage



On-State Characteristics



Transfer Characteristics



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.

ENTEGRECİ

Bu belge www.entegreci.com üzerinden sunulmaktadır.

Elektronik komponent tedarikinde Entegreci

Entegreci, Eskişehir merkezli, Türkiye geneline satış yapan bir elektronik komponent mağazasıdır. Entegreler (IC), mikrodenetleyiciler, transistörler, diyotlar, pasif elemanlar, konnektörler, modüller ve geliştirme kartları tek adetten seri üretim adetlerine kadar satılır. Ürün sayfalarında güncel stok durumunu, fiyatı ve datasheet bağlantısını bulabilirsiniz.

Parça koduyla arama

Üretici parça numarasını yazın; stok ve fiyatı hemen görün.

www.entegreci.com

Ürün kategorileri

Entegreden kapasitöre tüm elektronik komponent kategorileri.

Kategorilere göz atın

Üreticiler

Aradığınız üreticinin ürünlerini tek sayfada inceleyin.

Üreticileri görün

Toplu alım ve teklif

Listede olmayan ya da yüksek adetli parçalar için teklif isteyin.

Teklif isteyin

www.entegreci.com | **destek@entegreci.com** | **0850 305 90 34**

Entegreci is an online electronic components store based in Türkiye. Search by manufacturer part number to see stock, prices and datasheets for integrated circuits, microcontrollers, transistors, passive components and connectors, or request a quote for parts that are not listed.

Bu sayfa Entegreci tarafından eklenmiştir. Belgenin önceki sayfaları asıl yayıncısına aittir ve içeriği değiştirilmemiştir; en güncel sürüm için belgenin yayıncısına başvurun.